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CHANGE IN A CENTRAL PLACE SYSTEM:
TRADE CENTRES AND RURAL SERVICE IN CENTRAL ALBERTA

BY

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A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance a thesis entitled Change in a Central Place System: Trade Centres and Rural Service in Central Alberta, submitted by James Anderson in partial fulfilment of the requirements for the degree of Master of Arts.

ABSTRACT

This study concerns a system of central places in Central Alberta and changes which have occurred in the system, particularly since the Second World War. The present economic importance of trade centres and changes in their importance are evaluated. The trading practices of rural residents and changes in these practices are assessed and related to the rural service function of the trade centres. The study is based mainly on four types of data: (1) information received from trade-centre businessmen and (2) from rural residents, (3) population statistics and (4) the gross annual revenues of trade centre post offices. The merits and weaknesses of these data for this type of investigation are outlined, particular attention being given to the merits of postal revenues as an index of both the present and past status of trade centre economies.

The trade centres are divided into two groups: (1) those with over 140 businesses and populations of over 3,000 and (2) those with less than fifty businesses and less than 700 inhabitants. The study focuses on the centralization of trade from the small to the large centres. It was found that in the last decade there has been a simultaneous, though weaker trend of decentralization. There has been centralization within the small group, but centralization to the more widely spaced large centres appears to have now reached a point of "diminishing returns" and some trade has been transferred from large centres to one small centre. In general, the largest of the small centres and those furthest from a large centre have declined least since 1945. Small centres close to large have lost most of their

rural service function but some have grown in population.

Two main groups of factors are involved in this dynamic situation. On the one hand there are the advantages of economies of scale and the spatial concentration of diverse functions, transportation improvements, and changes in the methods of commerce and of agriculture. On the other hand there are transportation costs, the advantages of proximity to services, local loyalties, and the inertia of established location and fixed capital. Minor factors include rural depopulation, trade centre population change, trade centre amenities, the availability of credit, and individual initiative. Relative location is the single most important factor.

It is concluded that the small centres will continue to decline relative to large centres, most will experience an absolute decline, and the smallest will become extinct. Empirical and, especially, theoretical studies have too often ignored the dynamic aspects of central place systems. In particular, trade decentralization, centralization within groups of small centres, and the potential of postal revenue as an index both of spatial and temporal variations, require further investigation.

ACKNOWLEDGEMENTS

I should like to thank the many residents of the study area who supplied the information on which this thesis is largely based. I am grateful to the Battle River Regional Planning Commission for financing my research, and, in particular, to Mr. Ron Maslin and his staff for their advice and help. Dr. P.J. Smith supervised my work and I thank him for his encouragement and constructive criticism of the thesis at various stages.

The benefit of conversations with students and staff of the Department of Geography is gratefully acknowledged, the stimulating ideas of Professor J.I. Romanowski being especially appreciated. My baptism by fire in computing was eased by invaluable assistance from members of the University Computing Center and I extend my thanks to them. I also thank Dr. R.G. Ironside for criticizing portions of the first draft and, last but not least, I thank Mrs. Shirley MacDonald for typing from a difficult manuscript.

CONTENTS

	Page
ABSTRACT	iii
ACKNOWLEDGEMENTS	v
CONTENTS	vi
FIGURES	ix
TABLES	x
INTRODUCTION	xii

PART I

THE STUDY AND THE STUDY AREA	1
------------------------------	---

CHAPTER

1. Change in Central Place Systems	2
2. The Study Area and Methodology	10
A The Study Area	10
B Methodology	12

PART II

THE PRESENT RURAL SERVICE SYSTEM	20
----------------------------------	----

CHAPTER

3. Characteristics of the Trade Centres	21
A Small Trade Centres	21
B Large Trade Centres	30
4. The Present Economy of Surveyed Trade Centres	33
A The Survey Data	33
B Measures of Economic Status	34
5. Postal Revenue as an Index of Economic Activity	39
A Postal Revenue Data	39
B Test of Validity	42
C Trade Centre Revenues	44
D Postal Revenue and Population	46
6. Trade Centre Areas of Influence	49
A Trade-Area Delimitation	49

<u>CHAPTER</u>		Page
	B Trade-Areas of Different Functions	52
	C The Size and Shape of Trade-Areas	56
	D Trade-Area Population	58
	E Relative Locations	60
7.	The Trading Practices of a Sample of Rural Residents	62
	A Trade-Linkage Distributions	62
	B Statistical Tests of the Accessibility Factor	65
	C Analysis of Trade-Linkage Quality	69
	D Present Shopping Trip Frequencies	71
	E Present Expenditure in Trade Centres	76
	F Present Trade in Specific Commodities	80
PART III		
	RECENT CHANGES IN THE RURAL SERVICE SYSTEM	100
<u>CHAPTER</u>		
8.	Changes in Surveyed Trade Centres	101
9.	Economic Changes as Indicated by the Postal Revenue Index	115
10.	Population Changes	122
	A Trade Centre Population	122
	B Rural Population	125
	C Population Change Distribution	126
11.	Changes in the Trading Practices of Rural Residents	130
	A Changes in Trip Frequencies	131
	B Changes in Expenditure Allocations	132
	C Trade Changes in Specific Commodities	132
	D Trade Transfers	145
12.	Factors in the Centralization Process	150
	A Centralizing Forces	152
	B Decentralizing Forces	158
	C The Prospect for Small Centres	162
PART IV		
	CONCLUSIONS	168
<u>CHAPTER</u>		
13.	Conclusions	169
	A Changes in the Central Place System	169
	B Methodology	175
	C Theoretical and Planning Implications	179

BIBLIOGRAPHY	Page 181
APPENDIX A Trade Centre Business Survey Questionnaire	185
APPENDIX B Rural Household and Farm Survey Questionnaire	188
APPENDIX C Correlation and Regression Analysis	190
APPENDIX D Trade-Linkage Card Preparation and Computation	192

FIGURES

<u>Number</u>		<u>Following Page</u>
1.	The Study Area (Inset – Location of Study Area)	10
2.	Trade Centre Accessibility Zones – Ferintosh	17
3.	Correlation of Retail Sales and Postal Revenue	43
4.	Median Trade – Areas	49
5.	Population, 1961	58
6.	Present Shopping Trip Frequencies	73
7.	Postal Revenue Changes, 1923-24 to 1963-64: Large and Small Centres	118
8.	Postal Revenue Changes, 1923-24 to 1963-64: The Small Centres	119
9.	Population Changes, 1941-61	126
10.	Change in Shopping Trip Frequencies	131

TABLES

<u>Number</u>		<u>Page</u>
I	Trade Centre Accessibility Zones	18
II	The Number of Establishments Providing Selected Services in Surveyed Trade Centres	22
III	Statistical Data on the Economic Activity in Surveyed Trade Centres	35
IV	Trade Centre Postal Revenues and Populations	45
V	Estimated Size of Median Trade-Areas	56
VI	The Distribution of Surveyed Households and Trade-Linkages by Accessibility Zones	64
VII	Shopping Trip Frequencies and Accessibility	72
VIII	Percentage Expenditures and Accessibility	77
IX	Centres Receiving Large Proportions of Individual Expenditures	78
X	Grain Marketing and Accessibility	81
XI	Livestock Marketing and Accessibility	83
XII	Farm Machinery Purchase and Accessibility	86
XIII	Farm Machinery Servicing Purchase and Accessibility	87
XIV	Bulk Fuel Delivery and Accessibility	88
XV	Automobile and Truck Purchase and Accessibility	89
XVI	Automotive Servicing Purchase and Accessibility	90
XVII	Hardware Purchase and Accessibility	91
XVIII	Doctor Services and Accessibility	92
XIX	Bank Services and Accessibility	93
XX	Grocery Purchase and Accessibility	96
XXI	Clothing Purchase and Accessibility	97
XXII	The Number of Businesses Listed in Dun and Bradstreet Reference Books, 1940, 1950, and 1965	113

<u>Number</u>		<u>Page</u>
XXIII	Gross Annual Postal Revenues in Seventeen Trade Centres, 1923-24 to 1963-64	116
XXIV	Population Change, 1921-61 — The Small Trade Centres	123
XXV	Population Change, 1921-61 — The Large Trade Centres	124
XXVI	Trip Frequency Changes and Accessibility	133
XXVII	Percentage Expenditure Changes and Accessibility	134
XXVIII	Grain Marketing Changes and Accessibility	137
XXIX	Doctor Services Changes and Accessibility	138
XXX	Livestock Purchase Changes and Accessibility	139
XXXI	Grocery Purchase Changes and Accessibility	141
XXXII	Farm Machinery Purchase Changes and Accessibility	143

INTRODUCTION

Central places are trade centres which exist primarily to provide goods and services for a surrounding tributary area. The trade centres, large and small, which together provide the requirements of a given area can be termed a system of central places. Central place theory, a theory of location of tertiary economic activity, was first formulated by the German geographer, Walter Christaller,¹ to explain the size and spacing of urban centres. It has since been modified and improved,² and it has been applied to the internal structure of cities, but the explanation of the number, size and distribution of rural service centres remains one of its main purposes. Central place study has become a research field for economists, sociologists, planners and others, but it continues to be an integral part of geography because of the insight it give to spatial interaction and the character of areas.

The trade centres in a given area compete in providing the requirements of that area, and the conditions of competition are in a continual state of flux. A central place system is dynamic and change in one part of the system has repercussions in other parts. As a system adapts to changing conditions (e.g. of transportation) there are changes in trade centres and in the trading patterns of rural residents.

1. W. Christaller, Die Zentralen Orte in Süddeutschland, Jena: Gustav Fischer Verlag, 1933. (Translated As Central Places in Southern Germany, By C.W. Baskin, 1966, 230 pp.

2. B.J.L. Berry and W.L. Garrison, "Recent Developments of Central Place Theory," Papers and Proceedings of the Regional Science Association, 4 (1958), pp. 107-120.

Yet most statements of central place theory deal only with spatial variation at a fixed time, and the same is true of most empirical studies. The main outlines of the theory are now well known and are not restated here. An excellent summary of theoretical concepts and field research is provided by Berry and Pred in Central Place Studies: A Bibliography of Theory and Applications.³ They note, however, that "little evidence has been provided about the ways in which central place systems are changing," though "American rural sociologists have observed the decline of lower order central places."⁴ In a subsequent comment on research between 1961 and 1964, Berry indicates that since 1961 the temporal dimension has received more attention and that more emphasis is given to the theoretical implications of empirical findings. But such empirical studies of change as do exist are usually concerned with relatively large areas (and often lack detailed field work) and in some the main theme is population change rather than economic change per se. This is partly due to the difficulty of measuring economic variations both in time and space. Again, some studies neglect the smallest centres because of difficulties in applying a standard index with which to compare them to larger places.

Largely because of these characteristics of previous studies, it was decided to study changes in small centres within a relatively small area.

3. B.J.L. Berry and A. Pred, Central Place Studies: A Bibliography of Theory and Applications, Bibliography Series, Number One With Supplement, Regional Science Research Institute, Philadelphia, 1965. This annotated bibliography and review proved invaluable to the present study.

4. Ibid., p. 10.

The present study was commissioned by the Battle River Regional Planning Commission and it concerns rural service and trade centres in, or functionally related to, the Commission area (Figure 1). In 1962 the trade-areas of the three main centres in this planning region, Camrose, Wetaskiwin and Ponoka, were delimited by Rendall.⁵ Analysing a static situation, he concluded that time-distance and drawing power are the main determinants of the size and shape of trade-areas.⁶ The main purpose of the present study is to measure and account for recent changes in the rural service system. Particular attention is given to the decline of small centres because some work has already been done on large centres in the area, because the smallest centres have experienced the greatest proportional change and because small centres are often neglected in central place studies.

Since World War Two there have been very pronounced changes in this system. Large centres such as Camrose and Ponoka have grown while small centres have declined and some small places have become extinct. Services demanded by the farm community have become increasingly centralized and economic activity has become concentrated in fewer places. But before these changes in economic spatial variation were assessed it was necessary first to measure the present 'static' characteristics of the system. Following from Rendalls'

5. H.A. Rendall, The Trade Areas of Camrose, Wetaskiwin and Ponoka, unpublished M.A. thesis, University of Alberta, Edmonton, 1962.

6. Ibid., p. 94.

main conclusion, both the present spatial variation and changes in this variation were analysed in terms of relative location and the accessibility (or time-distance) factor.

Methods and Objectives

Study methods involved:

1. An interview survey of businesses in small centres and analysis of data collected.
2. An interview survey of a sample of rural residents in part of the study area.
3. Obtaining information on non-surveyed centres from officials in those centres.
4. A test of the validity of gross annual postal revenues⁷ as an index of the level of economic activity in trade centres.
5. Application of this index and a modification of it to allow for variation in trade centre population characteristics.
6. Analysis of population data.⁸

Data on the trading practices of rural residents were analysed in terms of trade centre accessibility (accessibility zones were constructed around the relevant centres — see Table I and Figure 2). The I.B.M. 7040-1401 computer in the University's Computing Centre was used in this analysis, and statistical tests of the association between accessibility and trading patterns were obtained.

7. Data supplied by the Canada Post Office, Information Division; also available in the Annual Reports of the Postmaster General.

8. Dominion Bureau of Statistics, Census of Canada, 1961; data on rural population by townships, and on the populations of unincorporated places were supplied on request by the Dominion Bureau of Statistics.

The main objectives of the study are to describe and analyse as precisely as possible:

1. The present economic importance of the various trade centres and their rural service function.
2. The present trading practices of rural residents.
3. Recent changes in trade centre economies and functions.
4. Recent changes in rural trading patterns.
5. The main factors involved in these changes.

The study has some relevance to practical planning and to central place theory.

Additional objectives include:

1. Prediction of some possible future readjustments in the central place system.⁹
2. An assessment of the merits and weaknesses of the approach and techniques used in the study.
3. An assessment of the general relevance of the study and its theoretical implications.

The study is confined to a small area and detailed field work was possible but the 'sample' of centres is small. Therefore no attempt is made to order these centres in a hierarchy on the basis of rigorous statistical differentiation. Instead they are grouped in an arbitrary though meaningful and convenient manner. For the same reason no attempt is made to calculate threshold populations but it is noted that these appear to be getting larger as

9. The predictions are based on subjective judgement and are little more than conjecture. Prediction is essential to planning but it demands more than a straightforward projection of recent trends.

business methods change. The study area is not discrete and there is no break in the rural service system — the centres studied compete with centres which are not considered. But this is usual in central place studies and the present study is concerned with a coherent part of a wider system of trade centres. Similarly the time dimension is a continuum, but the study of change is limited to the post-1945 period. Post-war changes have been of greater magnitude than changes which occurred immediately before and during the war, and recent change has most relevance to present phenomena. Yet even in the small area chosen it was not possible to interview all rural households and a sample had to be selected. And in the time available only a selection of small centres could be surveyed. Economic phenomena, location and accessibility are emphasized at the expense of other characteristics of the study area but they are basis elements of the system studied and central place theory is specifically concerned with the location of economic activity.

Presentation

The study is divided into four parts. In Part I, in order to put the study in its proper perspective, some characteristics of existing empirical studies are outlined. There is a discussion of the study-area and a detailed account of research procedures. Part II concerns the present rural service system. The present economies of surveyed centres are measured and trade-areas are delimited. The validity of the postal revenue index is verified and it is used for comparative purposes. The importance of the accessibility factor is tested and trading practices are analysed with reference to this factor.

In Part III recent changes in the system are assessed and the main factors involved are discussed. Possible future developments are outlined. Part IV comprises the concluding chapter of the thesis.

CHAPTER I

THE STUDY AND THE STUDY AREA

The purpose of this study is to investigate the relationship between the primary factors in the study area and the secondary factors.

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Chapter 1

Change In Central Place Systems.

The big towns are getting bigger and the villages smaller
 the townlets wither a time and die.

John Steinbeck, Travels With Charley.

Central place systems are dynamic. In North America and elsewhere rural service has become increasingly centralized and small centres have declined in the past few decades. At a given point in time, central places vary in size because of two basic and related factors: (1) some businesses require a larger number of customers than others and (2) some commodities are purchased at less frequent intervals than others. Thus businesses requiring a large number of customers need a large tributary area, they locate only in some centres and they tend to locate in the same few centres to their mutual advantage. Businesses providing commodities which are purchased at very frequent intervals require a smaller number of customers. For this reason, and also because proximity to the customer is particularly desirable when purchases are frequent, such businesses can, and do, locate in a greater number of trade centres. The general variation in the size and spacing of trade centres in a particular area is thus a general reflection of the needs of businessmen on the one hand and of their customers on the other.¹ The businessmen, and hence the trade centres, compete for customers.

1. For a more complete explanation, see: B.J.L. Berry and A. Pred, Central Place Studies: A Bibliography of Theory and Applications, Bibliography Series, Number One with Supplement, Regional Science Research Institute, Philadelphia, 1965, pp.3-18; and B.J.L. Berry and W.L. Garrison, "The Functional Bases of the Central Place Hierarchy," Economic Geography, 34(1959), pp. 145-154, in which an empirical test of central place theory shows that a hierarchical class-system of centres exists in reality and follows from a class-system of functions.

Any change in the convenience with which the customer may travel to obtain his requirements, a change in the number of customers in a given area or a change in the number of customers necessary for a business to remain profitable will therefore have an effect on the distribution of trade, of businesses and, ultimately, of trade centres. Studies of different areas in North America have shown that the decline of small centres is a widespread phenomenon and recurrent reasons given include the increased mobility of rural residents, rural depopulation and increases in the scale of retail operations. Economic activity and rural service have become concentrated in fewer centres; centralization has entailed a "progressive upward shifting of central functions to higher order centres" and these centres have experienced accelerated growth.²

In South Dakota, centralization accelerated in the 1940s as rural mobility increased and local loyalties decreased.³ In Oklahoma, some villages and hamlets have disappeared as the "age of the self sufficient rural neighbourhood ... has given way to one which is commercialized and based on the interdependence of many communities".⁴

2. Berry and Pred, op. cit., p. 10.

3. S. Chittick, "Growth and Decline of South Dakota Trade Centres, 1901-51", South Dakota State College Agriculture Experiment Station Bulletin, 448, May, 1955, p. 11.

4. J.C. Belcher, "Service Relationships of Farmers in Lincoln County, Oklahoma", Oklahoma Agricultural Experiment Station Bulletin, No. B-383, March, 1952, p.2.

From a study of Iowa towns it was concluded that "retail trade, for all but certain bulk and convenience items, has shown a tendency between 1935 and 1949 to concentrate in those towns that have been most conducive to the growth of larger business units." No reason is given as to why some centres are more "conducive" than others, but it is noted that every functional deficiency in a centre forces potential customers away to more distant centres, where their purchases then include items which are obtainable nearer home. Functional decline thus has a "multiplier effect."⁵ Hodge⁶ notes that trade centres are now fewer in number and are spaced further apart in Saskatchewan and that change was especially pronounced between 1941 and 1961. He sees rural service centre decline as a problem for planners and policy makers in the United States and Canada. But from a review of the literature he sees "inconsistencies about whether trade centres are really dying out or only declining relatively."⁷

These and other similar studies⁸ reach the same general conclusions and it is obvious that variation through time as well as

5. Bureau of Business and Economic Research, State University of Iowa, Retail Trade Area Analysis, 11 Southwest Iowa Towns, July, 1950, pp. 33 and 5.

6. J.F.G. Hodge, The Prediction of Trade Center Viability in the Great Plains, unpublished Ph. D. thesis, Massachusetts Institute of Technology, February, 1965, pp. 13, 14. (University Microfilms, Ann Arbor, Michigan.)

7. Ibid., p. 67.

8. This discussion is not intended to be a comprehensive review of the literature.

variation in space is salient characteristic of central place systems. Northam⁹ has shown that between 1940 and 1960 over 6,000 incorporated centres in the conterminous United States declined in population; in 1960 their median population was 333 and approximately 78 per cent had a population of under 1,000. He surmises from this that "the functional bases of lowest order central places are being reduced or removed" and suggests that "some change of the parameters of central place theory" may be necessary. He concludes that the factors contributing to this "dynamic situation" have not received enough consideration.¹⁰ This is at least partly because many dynamic studies (and Northam's is fairly typical) rely heavily on population data, exclude small unincorporated centres (precisely the type declining most) and cover large areas with a resulting lack of detailed field work.

In tracing the development of urbanization in a large area in Southern Sweden, Morrill shows how the gradual development of urban systems "helps account for the discrepancies found between theoretical and observed distributions."¹¹

9. R.M. Northam, "Declining Urban Centres in the United States: 1940-1960", Annals, Association of American Geographers, 53 (1963), No.1, p. 54 and Figure 1.

10. Ibid., p. 58

11. R.L. Morrill, "The Development of Spatial Distributions of Towns in Sweden: An Historical - Predictive Approach," Annals, Association of American Geographers, 53 (1963), No. 1, p. 2.

His work is outstanding because he incorporates the time element in a theoretical framework, using simulation models. These allow for "chance" occurrences and are therefore closer to reality than earlier theoretical constructions. Further study of real situations, as well as being worthwhile in itself, is essential if the development of theory is to be continued. In particular there is a need for more precision in central place studies.

As Leeming¹² points out, economic geography suffers from the lack of statistics relating to specific areas and, more particularly, from the dearth of statistics expressed in monetary terms. This partly explains the frequent reliance on population data (which are available for incorporated places) but it also indicates the need for detailed field investigation. This need is greatest in the case of small centres and the problems are magnified when the temporal dimension is considered. The absence of even rudimentary data for unincorporated centres has been mentioned by Trewartha.¹³ Thus in central place studies the lowest order centres are frequently ignored. Smailes has used banks, hospitals, newspapers and other establishments and commodities not found in small places as criteria for defining hierarchical rank.¹⁴

12. F.A. Leeming, "Output Accounting Applied in a Small Area," Transactions, Institute of British Geographers, No. 36, June, p. 69.

13. G.T. Trewartha, "The Unincorporated Hamlet: One Element in the American Settlement Fabric," Annals, Association of American Geographers, 33(1943), p. 33.

14. A.E. Smailes, "The Urban Hierarchy in England and Wales," Geography, 29(1944), pp. 41-51.

And Bracey devised an "index of centrality" of rural service centres using fifteen services (including eight professional services) which are not obtainable in most low order centres.¹⁵ More recently, Siddall has used employment data for wholesale trades in measuring urban centrality,¹⁶ but wholesaling is not a function of small centres nor are employment data available for small places. Data on labour inputs are often used as economic indicators in the absence of more direct measures but they are weakened by the fact that output per person varies widely.¹⁷ Similarly comparisons based on the total number of businesses in a centre suffer from the fact that businesses vary in function and volume of trade. Where an arbitrary classification of functional range or number of businesses is employed the fact that it is arbitrary detracts from subsequent findings. Chittick classifies South Dakota centres by their population size (e.g. 250 - 499 inhabitants) and then assigns particular functions and an average number of businesses as characteristic of each size-class.¹⁸ Saskatchewan trade centres have been ranked by range of business (e.g., hamlet: 2 - 10 businesses; village: 11 - 25, etc.).¹⁹

15. H.E. Bracey, "Towns as Rural Service Centres," Transactions and Papers, Institute of British Geographers, 19(1953), pp. 95-105.

16. W.R. Siddall, "Wholesale-Retail Trade Ratios as Indices of Urban Centrality," Economic Geography, 37(1961), pp. 124-132.

17. Leeming, op. cit., p. 69.

18. Chittick, op. cit., p. 7.

19. Saskatchewan, Royal Commission on Agriculture and Rural Life, Report No. 12, Service Centres, Regina, 1957, p. 30.

Hodge²⁰ has used this same method to classify these same centres, but he decided on a different class-interval: his Saskatchewan "hamlet" contains between two and seven businesses. Hodges' work exemplifies the imprecision of large-area studies. He classes all centres in the province according to the number of establishments in them; businesses are classified by their main function, other functions of a multi-functional business being ignored; average trade-area sizes are calculated by dividing the area of the province by the number of centres in given classes; and from this, trade-area populations are reckoned using data on average population densities.²¹ Thus as well as being imprecise, his findings on the present central place system and on recent trade centre change are in fact partly determined by the subjectively imposed classification scheme. A much greater degree of objectivity has been achieved by Berry and Garrison. Without initially arranging the data into any groupings, they were able, using statistical techniques, to derive from the data an hierarchical classification of trade centres in Snohomish County, Washington.²² However, their method is not copied here because the present study deals only with a small "sample" of centres. Because the sample is small, each centre can be treated individually.

20. Hodge, op. cit., p. 260.

21. Ibid., pp. 98-124 and Appendix A.

22. Berry and Garrison, op. cit., pp. 145-154.

The precise measurement of spatial variation and interaction is a major problem in central place study, and the methodological weaknesses have been clearly outlined by Davies.²³ All these methods have disadvantages and it was therefore decided to use several approaches in the present study to ensure greater validity. The measurement of variation through time poses additional problems. Davies²⁴ notes that while particular functions may indicate trade centre status the importance of these functions is liable to change with time. However these problems have not yet received much attention and will be discussed as they arise in the present investigation.

23. W.K.D. Davies, "The Ranking of Service Centres: A Critical Review," Transactions, Institute of British Geographers, No. 40, December, 1966, pp. 51-65.

24. Ibid., p. 56.

Chapter 2

The Study Area and Methodology

A The Study Area

This area in Central Alberta (Figure 1) lies near the north-western edge of the Interior Great Plains of North America. It comprises an undulating plain, covered for the most part with fertile "black" soils, and it contains a number of sizeable lakes, some of which constitute significant barriers to movement. It is an area of mixed farming where cash grain cropping, livestock raising and dairying are important, and it is fairly densely populated (see Figure 5). This parkland region was settled and opened for agriculture mainly in the period 1890 - 1910. All the present large trade centres and most of the small centres were established in this period.¹ The majority of the small centres grew up beside the newly constructed railroads and the initial pattern of central places was influenced by the growth and arrangement of this most important element of the transportation network.

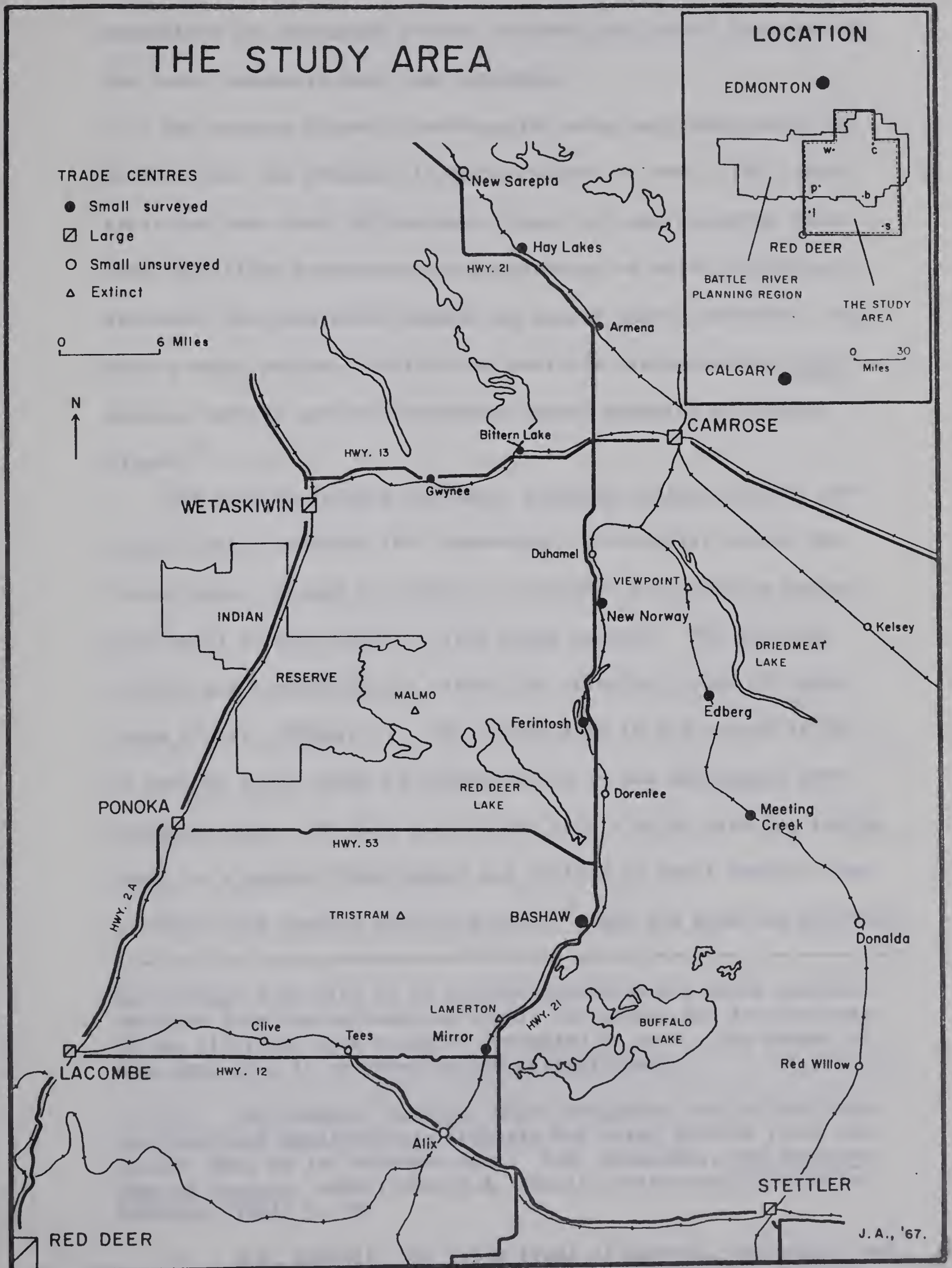
Centralization trends were already evident in the 1930s but the ending both of the depression and the war brought great changes and centralization has been most significant since 1945. In the post-war period transportation has been greatly improved, farms have become mechanized and many have increased in size,² rural

1. For accounts of this initial settlement period, see: The Golden Trail, The Camrose Canadian, August, 1955, 136 pp.

Background information on the historical development of the province is contained in: E.J. Hanson, Local Government in Alberta, McClelland and Stewart, 1956, 145 pp.

2. The Rural Household and Farm Survey revealed that most farmers switched from horse- to tractor-power between 1945 and 1950.

Figure 1.



population has decreased and the economic and social horizons of the rural community have been expanded.

The centres presently serving the area can conveniently be divided into two groups: (1) large centres of over 3,000 inhabitants and more than 140 business firms, (2) small centres with less than fifty businesses and populations of under 700 (though for most, the respective maxima are nearer twenty and 300). All have a rural service function and most are predominantly rural service centres and are reasonably 'pure' examples of central places.³

The area containing the small surveyed centres and the surveyed rural households (for convenience hereinafter termed the "study area," though the study is concerned with centres beyond this area) is surrounded by five large centres. The surveyed centres and households are within the tributary areas of these large places, (Figure 4). The chosen area is not unique as far as central place study is concerned but it has advantages over adjacent areas. In this part of the Battle River planning region there is a greater development and variety of small centres than in other less densely populated parts.⁴ And the area was selected

The average farm size is at present approximately three quarter - sections (one quarter-section equals 160 acres) and thirty-three of the 115 farms have recently increased in size. The number of farm employees in the area is now insignificant.

3. For example, Camrose, which dominates much of the area, has important manufacturing industry but rural service forms the greater part of its economic base: R.M. Donaldson, The Economic Base of Camrose, unpublished M.A. thesis, University of Alberta, Edmonton, 1965, p. 86.

4. H.A. Rendall, The Trade Areas of Camrose, Wetaskiwin and Ponoka, unpublished M.A. thesis, University of Alberta, Edmonton, 1962, p. 89.

to include Bashaw, a small centre which has actually grown in the last decade. It is hoped that conclusions reached in this area will be of benefit to further studies in Central Alberta and beyond.

B Methodology

Empirical central place studies have been classified as follows: studies emphasizing central places, studies emphasizing trade-areas, those relying on direct measurement and those relying on indirect indices.⁵ The present study embodies all four approaches, and the central place system is viewed from the standpoint of both the businessman and the rural consumer. The same general approach is applied first to the present situation and then to the study of recent change.

Small centre businessmen and a sample of rural residents were interviewed. These two surveys complemented one another. In particular the Rural Household and Farm Survey produced information on centres not surveyed and it gave additional perspective on the rural service function of trade centres. Information given by businessmen was checked by the rural survey, which permitted a more detailed analysis of locational aspects of rural service.

Both surveys were inadequate for obtaining data on change: the historical perspective of interviewees varied and former operators

5. B.J.L. Berry, Geographic Aspects of the Size and Arrangement of Urban Centres: An Examination of Central Place Theory With an Empirical Test of the Hypothesis of Classes of Central Places, unpublished M.A. thesis, University of Washington, 1956, pp. 31, 32.

of businesses which had been closed or sold could not be found for interview. Nor could all the centres which serve the area be directly compared even in the present. An indirect index of economic importance, available in published sources, was therefore needed. Population data was deemed inadequate as varying proportions of trade centre populations are employed in central place functions; the proportion employed in "non-basic" activity tends to increase as the population size increases.⁶ Gross postal revenue data were found to correlate closely with data on the overall economic activity of trade centres and, as is explained in Chapter 5, this was the index chosen.

The Trade Centre Business Survey involved interviewing a representative of each business in the small centres selected (see Figure 1) and completing a standard questionnaire in his presence (see Appendix A). The questionnaire was designed to get reliable information on the functions, economy and trade-area of each centre, and on recent (i.e. post-war) change and reasons for change in these phenomena. A number of indicators of the economic importance of each business, and, in aggregate, of each centre, were obtained: turnover, stock, profit, trade-area, employment, and payroll. Interviewees were asked for their opinions on causes of change and on the future prospects of their centre.

6. E.L. Ullman and M.F. Dacey, "The Minimum Requirements Approach to the Urban Economic Base," Proceedings of the I.G.U. Symposium in Urban Geography, Lund, 1960, Lund Studies in Geography, Ser B Human Geography, No. 24, pp. 121-143.

The questionnaire was devised to facilitate the cross-checking of answers, and several questions were asked in more than one form. The questionnaire was tested on centres outside the study area before being applied in the selected centres.

The Rural Household and Farm Survey involved interviewing a member of each selected rural household and recording information on a standard questionnaire form (see Appendix B). Returns from mailed questionnaires would probably have been very poor, but in the time available only a limited number of personal interviews could be carried out. A sample of households was therefore selected and it was felt that personal contact would help compensate for this limitation. It was intended that this sample survey would provide reliable data on present patterns of rural service, on changes in these patterns and, more specifically, on trade in particular commodities. Interviewees were asked to give reasons for trade changes, and their opinions on trade centre change and prospects were sought.

The sample was taken from within the combined trade-areas of Bashaw, Edberg, Ferintosh and Meeting Creek (Figure 4), rather than have selected households thinly spread over the whole study area. This ignores small centres in the northern part of the study area but it was felt that the importance of the distance factor and the relative drawing power of centres of varying size could better be appreciated from a concentrated sample. The sample area is overlapped by the trade areas of five large centres (Figure 4) and it has the advantage of containing Bashaw.

Sections of land (640 acres) were grouped in blocks of four and every second block was shaded so that the map of the area

resembled a chess-board. The area contained 292 shaded sections (sections straddling the area boundary being included). Shaded sections were numbered 1 to 292, in a consistent fashion, and, using tables of random numbers, 40 per cent (117) were selected. The final selection of sections was therefore random. On each of these 117 sections one rural household was surveyed. This ensured a reasonably even distribution of surveyed households, non-shaded areas being surrounded by areas from which the sample was taken. The first house encountered on a selected section was the one surveyed.

It was intended that the use and change in use of particular centres for specific services could be compared and that the analysis should be in terms of the locations of the surveyed households relative to these centres. A total of twenty-five trade centres were involved. As the survey data were collected by households, they had to be rearranged according to trade centres. The trading relationship between a rural household and a single trade centre was treated as a separate entity, and termed a "trade - linkage." From a completed questionnaire all the data on use, change of use, and (by inference) non-use of a particular centre for various commodities were coded and punched on an I.B.M. card,⁷ along with a coded statement of the accessibility of that centre to the rural household concerned. The 117 surveyed households

7. See: Appendix D.

have a total of 592 trade-linkages (each household on average trading in five centres). The trade-linkage cards were grouped by trade centre and each group was separately processed using an I.B.M computer and a programme⁸ for obtaining cross-classification tables for selected pairs of variables. The frequency and percentage of variables in the linkage group of each centre could then be compared, and characteristics of trade in specific commodities could also be assessed.⁹

The location of households in relation to each centre had to be expressed in a consistent manner. Rendall found that time-distance is more important than actual distance in influencing trade-area size.¹⁰ He measured accessibility assuming speeds of 60 m.p.h. on paved highways and 45 m.p.h. on gravel roads.¹¹ He does not record the basis on which these speeds were chosen but they appear to be too high: 60 m.p.h. is the maximum legal speed limit on highways in good driving conditions. The survey provided a better basis (question 11, Appendix B) for calculating the variation in the efficiency of roads of different quality. From data provided by interviewees the average speed on paved highways was calculated to be 36.5 m.p.h. and on gravel roads 27 m.p.h.

8. Program CROS-1, T-801, Cross Classification With Subdivision, Computing Center Library, University of Alberta, Edmonton.

9. See: Appendix D and Chapters 7 and 11.

10. Rendall, op.cit., pp. 68, 70.

11. Ibid., p. 65.

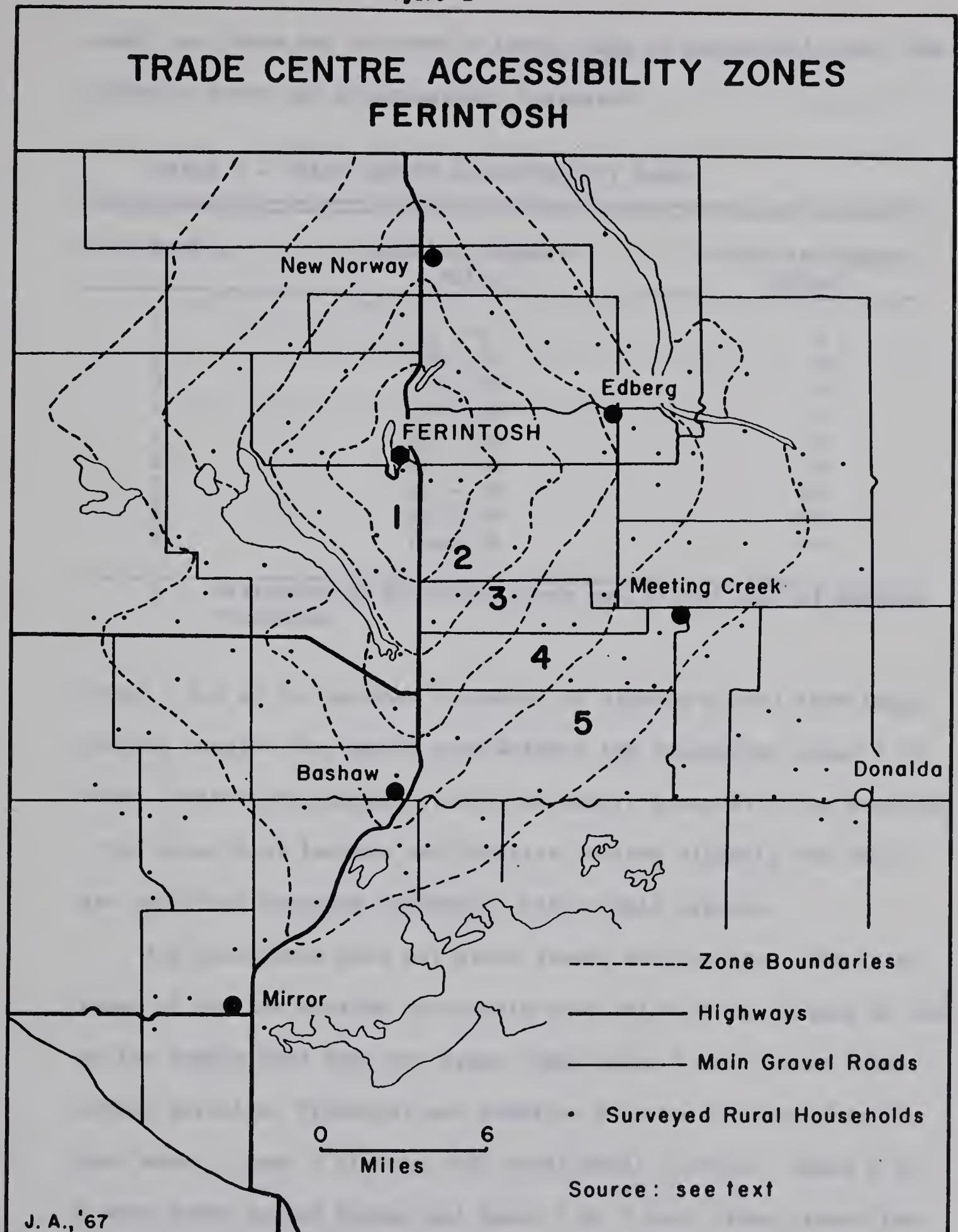
(approximately 74 per cent of the former). Gravel roads were therefore rated 75 per cent as efficient as highways and zones of similar accessibility were drawn around each trade centre on this basis.

The delimitation of these zones was arbitrary. It was not possible to calculate critical accessibility levels from the collected data and these levels vary greatly with the size of centre and the location of competing centres. An arbitrary but consistent system of zones of actual accessibility around each centre provides a standard basis for comparing the use made of various centres by rural residents located at specified distances from them.

The zones had to be sufficiently wide to include at least five surveyed households,¹² but not so wide that greatly differing accessibilities were lumped together in one category. The delimited zones represent a compromise between these two requirements. In several zones there are less than five surveyed households, but it was thought that these deficiencies did not warrant a widening of all zones. The zonal scheme chosen is shown in Table I, and is exemplified, using the case of Ferintosh, in Figure 2. The effect on accessibility of variation in road quality, and of physical features, can be seen from this map. The inner zones are kept relatively narrow because the small centres are closely spaced and small differences in their accessibility are significant. To facilitate the arrangement of data on I.B.M. cards only nine zone categories were

12. In the conventions of statistics, five observations is regarded as the minimum number from which useful results may be obtained.

Figure 2



used. As these had to cover a large range of accessibilities, the width of zones was progressively increased.

TABLE I — TRADE CENTRE ACCESSIBILITY ZONES

Zone Number	Range in Highway-Miles	Width in Highway-Miles ¹
1	0 - 4	4
2	4 - 7	3
3	7 - 10	3
4	10 - 14	4
5	14 - 20	6
6	20 - 28	8
7	28 - 38	10
8	38 - 50	12
9	Over 50	—

1. Distances on non-paved roads are 75 per cent of highway distances.

Zones 6 are at the maximum distance (28 highway-miles) from large centres outside the sample area without the respective zones 6 of these centres overlapping within the sample area, with the exception that zones 6 of Lacombe and Stettler overlap slightly but there are only four surveyed households within this overlap.

All nine zones were not drawn around each centre. The inner zones of centres outside the sample area which do not extend as far as the sample area were not drawn. Only zones 1 and 2 were drawn around Dorenlee, Viewpoint and Lamerton because no households beyond zones 2 have a linkage with these small centres. Zones 1 to 6 were drawn around Bashaw and zones 1 to 5 were drawn around the other small centres (e.g. Ferintosh - Figure 2). The households in each drawn zone were noted, their exact locations having been checked on the original field maps. The location of each household in

relation to a particular centre was expressed on the relevant trade-linkage card by the zone number. Surveyed households beyond drawn zones were checked for a possible trade-linkage with the relevant trade centres, and in the few instances where there was a linkage, the accessibilities of the centre to these households were measured individually and expressed as a zone number. In each drawn zone the number of surveyed households was recorded and the number which have a trade-linkage was noted (Table VI).

PART II

THE PRESENT RURAL SERVICE SYSTEM

Present characteristics of the rural service system for the study-area were evaluated from the Trade Centre Business Survey, from published data, and from the Rural Household and Farm Survey. The Business Survey provided data for measuring the present economies of the surveyed centres. Gross postal revenue data which were found to correlate closely with the volume of business in surveyed centres, were used as an economic index for comparing the present importance of surveyed and non-surveyed centres. The Rural Household and Farm Survey provided data on the trading practices of rural residents, and enabled the importance of the accessibility factor to be statistically tested.

Chapter 3

Characteristics of the Trade Centres

The trade centres which provide most of the goods and services required in the study area are the small centres within it, and the five large centres nearest to it, viz. Camrose, Wetaskiwin, Ponoka, Stettler and Lacombe. (Figure 1)

A. Small Trade Centres

The number of businesses which provide eighteen selected goods and services, in each surveyed centre, is shown in Table II. This selection is arbitrary but it includes the more important functions of the small centres and it brings out the variation within the "small" group.

Multi-functional businesses are common in small centres and reflect, in part, a low degree of business specialization. Data on each function of a multi-functional establishment could not be given by interviewees. Separate functions are frequently of near equal importance and unusual combinations occur (e.g. a garage-cum-feed mill in Edberg). A classification of the businesses in a small trade centre according to their main function is therefore of limited value and can in some instances be misleading.

Many surveyed businesses provide two or more of the selected classes of goods and services. Bulk fuel depots exist separately or in conjunction with garages, service stations, and, in Armena, with a general store. Some garages, several service stations, and implement dealers, and blacksmith and welding shops provide farm machinery servicing. Automotive servicing is provided by garages, service stations and, in Bashaw, by tire shops. Automobile

TABLE II The Number of Establishments Providing Selected Services in Surveyed Trade Centres

SELECTED SERVICES AND SPECIALIST BUSINESSES	Surveyed Trade Centres ¹												
	Group (1) ²	Group (2)			Group (3)			Group (4)					
	Erwick	Dorenlee ⁴	Duhamel ⁴	Blittem Lake	Armenia	Gwynne	Meeting Creek	New Norway	Ferintosh	Edberg ⁶	Mirror ⁶	Hay Lakes ⁶	Bashaw ⁶
POPULATION, 1961	(13) ⁵	24	22	76	32	109	71	263	174	179	577	233	614
POSTAL REVENUE, 1963-64 ³ \$	-	-	-	\$345	\$615	\$697	\$1,371	\$2,386	\$1,305	\$1,819	\$2,565	\$2,423	\$8,937
NO. OF BUSINESSES SURVEYED	1	-	-	1	1	3	6	11	9	10	12	15	43
Grain Elevators ³	-	2	2	1	3	3	3	3	3	3	1	4	4
Food Supply	-	-	-	-	1	2	1	1	2	2	3	2	6
Bulk Fuel Delivery	-	-	-	-	1	1	2	2	2	2	-	3	5
Farm Machinery Service	-	-	-	1	-	1	2	2	1	3	1	4	5
Automotive Service	1	-	-	-	-	1	2	5	3	1	4	3	8
Hotel Services	-	-	-	-	-	-	1	1	1	1	1	1	1
Hardware & Lumber Supply	-	-	-	-	-	-	-	1	1	2	1	2	5
Farm Machinery Supply (Agencies)	-	-	-	-	-	-	1	-	-	1	-	-	4
Auto. Supply (Agencies)	-	-	-	-	-	-	1	-	-	-	-	-	3
Insurance Supply	-	-	-	-	-	-	-	-	-	-	1	1	3
Cream Marketing	-	-	-	-	-	-	-	-	-	-	-	1	1
Banking	-	-	-	-	-	-	-	-	-	-	-	-	1
Auction Mart.	-	-	-	-	-	-	-	-	-	-	-	-	1
Newspaper	-	-	-	-	-	-	-	-	-	-	-	-	1
Pharmacy	-	-	-	-	-	-	-	-	-	-	-	-	1
Hospital	-	-	-	-	-	-	-	-	-	-	-	-	1
Cinema	-	-	-	-	-	-	-	-	-	-	-	-	1
Finance Companies	-	-	-	-	-	-	-	-	-	-	-	-	2

Sources: Trade Centre Business Survey. Population: Census of Canada, 1961 and data supplied by the Dominion Bureau of Statistics. Postal Revenue data was supplied by the Canada Post Office.

Sources: Trade Centre Business Survey. Population: Census of Canada, 1961 and data supplied by the Dominion Bureau of Statistics. Postal Revenue data was supplied by the Canada Post Office.

1. Large centres and other non-surveyed centres are excluded because exact information on the functions of each business in them was not obtained from the trade centre officials.
2. The division into four groups is explained in the text.
3. Post Office and grain elevator managers were not interviewed.
4. As grain elevators are the only establishment in Dorenlee and Duhamel, these are not "surveyed centres", but they are within the study area.
5. 1956 figure; no population figure for 1961 was available for Ervick.
6. A pipeline welding business in Edberg, and auto body shop in Mirror, Bashaw cinema and a barber shop in Hay Lakes were not surveyed; their operators could not be found for interview despite repeated visits to these centres. The bank, Provincial Treasury Branch office, Provincial Liquor Store and the hospital in Bashaw were not surveyed.

agencies or sub-agencies are found only in garages, but machinery agencies exist separately and in conjunction with garages. In addition two Bashaw hardware stores hold machinery agencies but do very little machinery servicing. Food is bought in general stores, grocery stores, and meat shops and, in Bashaw, in a bakery shop. Insurance is purchased in separate agencies, in the lawyer's office in Mirror, and from an accountant and a finance company in Bashaw. Hotels have a cafe and their most profitable function is the sale of beer; only Bashaw hotel has a significant bedroom-occupancy rate. There is generally a higher degree of business specialization in Bashaw than in the other small centres.

The surveyed centres are, to varying degrees, rural service centres. Grain, cream and livestock marketing, bulk fuel delivery, farm machinery supply and servicing, and to a great extent hardware and lumber supply, are services to the farmer. The other selected goods and services are demanded by trade centre and rural resident alike. Ervick has no specifically farmer-oriented function and, for their respective sizes, Mirror and Bittern Lake do not provide much rural service. Smaller centres such as Edberg and Hay Lakes have more farmer-orientated services than Mirror, and Bittern Lake has fewer functions than Meeting Creek. However, with the exception of Ervick, all the surveyed centres perform farmer-oriented functions. And with the exception of Duhamel and Dorenlee, they all sell goods essential to both farm household and trade-centre population.

On the basis of their functional complexity, the small trade-centres are, for the sake of convenience, divided into four sub-

groups in Table II. These groups will be discussed, and small centres not surveyed but in competition with surveyed centres, will also be described where appropriate.

Group I: Trade-centres without a post office. Ervick, at the junction of Highways 21 and 13, has one business – a service station and cafe which is open 24 hours a day. Over 80 per cent of its trade is with highway travellers and as Ervick is no longer a rural service centre it is excluded from further consideration. In contrast the only function of Duhamel and Dorenlee – grain marketing – is farmer oriented. The number of trade-centres in the study-area has declined: since 1960 the grain elevators in Viewpoint and Lamerton have closed; Tristram was extinct by 1940 and Malmo became extinct in the early 1950s.

Group 2: Centres with a post office. They are distinguished from Group (3) centres by the absence of hotels and other establishments. There is a machinery repair shop in Bittern Lake, and though the centre has lost most of its commercial function (the general store closed in 1962) it remains a residential centre. Its population which includes many who commute to jobs in Camrose and obtain their day-to-day needs there, has more than trebled since 1951. In Armena there is a general store and bulk fuel business, and Gwynee has a general store, a grocery store and a garage. All are owner-operated and only the garage has non-family employees. It does automotive servicing and some farm machinery servicing and bulk fuel delivery is an important part of its business. Over 70 per cent of its trade is with the surrounding rural population;

most of the food trade is also local but less than half the regular customers of the food stores continue to get their "weekly groceries" in Gwynee. All businesses in Group (2) centres have suffered from the increased competition of larger centres - particularly Camrose and Wetaskiwin.

Group 3: centres all have an hotel and all except Meeting Creek supply lumber and hardware. But there is considerable variation within this group. Only Meeting Creek has retained an automobile agency and only Hay Lakes has a creamery; automotive servicing is prominent in New Norway and is very limited in Edberg, but the latter is noteworthy for machinery sales and servicing. Yet despite this variation, Group (3) centres form a recognizable subdivision. They are clearly subordinate to Bashaw but they are functionally more complex and have more businesses than Group (2) centres.

The two garages in Meeting Creek are very important in the centre's economy, as are the five garages and service stations to New Norway's economy, but there are fewer mechanics and no automobile or farm machinery agencies in New Norway. Both New Norway general stores burned down in 1965 and at the time of survey only one of the storekeepers was building new premises. Edberg is a more important rural service centre than New Norway, Ferintosh or Meeting Creek. Over 60 per cent of the regular customers in its two food stores get their "weekly groceries" in Edberg. This is a decline from previous years, but is a significantly larger proportion than is the case in New Norway, Ferintosh, Gwynee and Armena food stores, all of which have suffered more from Camrose and Wetaskiwin competition. The food stores in Hay Lakes have

also lost trade to Camrose, and the centre no longer has an automobile or farm machinery agency though it has a used machiner business. Farmers deliver cream to Hay Lakes Creamery two or three times a week. Interviewees considered that the creamery brings a lot of trade to the centre, but at the time of survey it was rumoured that it might soon close, and its business be centralized in Camrose.

In addition to the functions listed in Table II, Group (3) centres provide other goods and services. Since 1959 Ferintosh has been the base for a mobile feed-mill; New Norway has a cafe, a barber shop and pool hall, a shoe repair and sports shop, and a service station deals in used farm machinery; Edberg has a cafe and its garage owner has operated a feed-mill since 1958; Hay Lakes has a barber shop and a Calgary Power office; and food stores in Hay Lakes, Edberg and Mirror have a livestock slaughtering and curing service for farmers. In Mirror there is the head office of the Buffalo Lake Farmers' Co-operative Marketing Association, a sundries store and a barber shop; and Mirror, alone among the small centres, has a resident lawyer. This is something of an anachronism: legal services have become centralized in the large centres. Bashaw and Alix, though more important than Mirror, no longer have resident attorneys.

Mirror is exceptional in other respects: it is the Division Point on the railway and was a railway maintenance centre until its "round-house" was closed down in 1958. The centre has suffered because of railway company policy, and like other small centres it

has also lost trade to larger places. It is fairly well equipped to meet the day-to-day needs of its nearly 600 inhabitants but its few farmer-oriented services are poorly developed. There is only one grain elevator in Mirror (it is the same size as the one in Bittern Lake), whereas, until recently, two elevators of similar size were operative in Lamerton. Bulk fuel is sold but is not delivered to the farm and only a highway-oriented service-station and cafe business on the outskirts of the centre does any machinery servicing. However machinery servicing only started in 1964 when the service-station opened and, with the decline in Mirror's railway functions, Mirror businessmen are looking more to the farmer for trade. Custom livestock slaughtering was started only recently by the meat market operator, and the hardware dealer said his trade-area had expanded. The hotel and cafe business may be more typical: its trade has declined sharply since the "round-house" closed.

Railway employees, both active and retired have settled in Mirror, and with a large proportion of residents not engaged in central-place functions Mirror can be compared with Bittern Lake. Its turnover of business is very much greater but its trade-area (see Figure 4) is only slightly larger; much of its trade is internal (i.e. non-basic) and only a small part of the population's total income is from rural trade.

According to the "collective-memory" of interviewees, Group (3) centres have each suffered a net loss of between five and ten businesses since 1945, and only a few new businesses have been established. Though there are fewer small centres, and small centres have

fewer businesses, most extant businesses do less trade than formerly, and some perform fewer functions.

New Sarepta and Donalda were not surveyed¹ but as they are in competition with Hay Lakes and Bashaw, respectively, they merit discussion. Both have three food stores, two fuel depots, two service stations, one farm machinery agency, an hotel and an insurance agency; Donalda has three hardware and lumber businesses while New Sarepta has only one, and Donalda is one of the few small centres which still has a bank.² There is also a creamery, feed-mill, pool hall and barber shop in the centre, and in New Sarepta there is an auction mart, a trucking company, a shoe repair shop and the hardware and insurance businesses, have been established in New Sarepta since 1960. New Sarepta has a wider functional range than Hay Lakes and has withstood the competition of large centres more successfully. A Hay Lakes businessman and the New Sarepta Secretary both claimed that New Sarepta is the better "business-town" and it is significant that it is the further from Camrose. In contrast, Donalda is much less important than Bashaw and has declined while Bashaw has grown. In 1964 water and sewerage systems were installed and some retired farmers are settling in the centre. A few residents commute to Stettler and Donalda may grow as a residential centre.

Bashaw as 'Group (4)' is easily differentiated from the other small centres. It has retained functions which have deserted the

1. They were not surveyed because there was time available to cover only a limited number of trade-centres.

2. Information from the Secretary-Treasurers of New Sarepta and Donalda.

other small centres and it has assumed new functions. The number of businesses performing old-established functions has in many cases increased. At least eighteen new businesses have been established since 1950 and interviewees recognized that this has been possible because Bashaw is relatively far from large centres. In the urban hierarchy Bashaw now occupies a position intermediate between the large and the small centres, though it is closer to the latter in economic importance.

Recent additions include a thirty-two bed hospital and two resident doctors, the two finance companies, the auction mart., and a large food store (larger than those in other surveyed centres). One of the hardware dealers is the town's undertaker, and he also operates an ambulance service and does road grading for Camrose County. A recently opened small department store sells appliances and clothing as well as hardware and the newspaper proprietor does commercial printing.

In addition to the functions listed in Table II, Bashaw has two clothing stores, a jewellery shop, a radio and T.V. shop, a coin laundry, a seed cleaning plant, a feed mill, an accountancy business, and a government liquor store, all established since 1945. It also has a bakery, a Calgary Power office, a bank, a cinema and a Provincial Treasury Branch office, and other establishments more common to small centres. A Camrose dentist and a Camrose lawyer visit the centre once a week, and once a month a Ponoka optometrist sees clients in Bashaw hospital.

The only small centre which presents significant competition

to Bashaw is Alix, and like Bashaw it occupies an intermediate position in the urban hierarchy. It has over thirty business establishments, including a bank, a cinema, two automobile agencies, two machinery agencies, two electrical businesses, a creamery and a real-estate and insurance business.³ However Alix has fewer functions than Bashaw, and at least five firms have recently closed.

The present degree of centralization of the selected functions can be seen in Table II. Grain marketing is the most decentralized, followed by postal service. Food stores are also widely distributed (until recently there were general stores in Bittern Lake, Duhamel, Dorenlee and Lamerton), and bulk fuel delivery, and machinery and automobile servicing are relatively decentralized. Other goods and services can be obtained only in the larger small centres, and for some commodities it is necessary to go to a large trade-centre. The small centres are essentially retail trade-centres.

B Large Trade Centres

A brief discussion of the large centres will help explain why they are obtaining an increased share of the rural trade, and will enable Bashaw's importance to be seen in its proper perspective. Of the five large centres nearest the study area, Camrose is the largest and most important industrially, but it is primarily a rural service centre; rural service is also the main function of Wetaskiwin, Ponoka, Stettler, and Lacombe. Each has between 140 and 250 businesses.⁴ The number of businesses, though a crude measure

3. Information from the Secretary-Treasurer of Alix.

4. Information from municipal officials.

of commercial status, illustrates the great difference between the surveyed centres and these large trade centres. The larger but more distant centres, Edmonton, Calgary and Red Deer,⁵ also trade in the study area but they are not significant in its retail commerce and hence do not present as much competition to the surveyed centres.

The large centres provide all the commodities available in smaller places, but more businesses are involved, the volume of trade is much greater and the service is often of a higher quality. For instance, food and hardware stores, fuel depots, hotels and automotive and machinery servicing businesses exist in greater numbers in the large centres and often stock a greater variety of goods. In Camrose there are thirteen hardware shops, Wetaskiwin has eight and Lacombe five; and in each of the five large centres there are at least two hotels. There are eight farm machinery dealers in Wetaskiwin and ten businesses which service machinery. In each of the other four centres there are four or more machinery agencies. The dearth of licensed mechanics in small centres may be indicative of the quality of automobile and machinery servicing available in them; it was one of the reasons why machinery agencies were withdrawn from small centres and centralized in larger places. Though there are five automobile service stations in New Norway only one licensed mechanic is employed and none are employed in Ferintosh. Meeting Creek and Gwynee each has two, while six are employed in Bashaw.

5. Dominion Bureau of Statistics, Census of Canada, 1961: Populations: Edmonton, 281,027; Calgary, 249,641; Red Deer, 19,612.

But the essential difference between large and small centres is that in some functions the large centres have a near or complete monopoly. Bashaw now has a small hospital but in Wetaskiwin there is a larger hospital and five clinics, while one clinic in Camrose employs thirteen physicians and surgeons. Both centres have four pharmacies, Bashaw only one. There are two or more law firms and at least two accountancy firms in each of the large centres. In Camrose there are seventeen insurance and real estate businesses, and Lacombe now has eleven where in 1954 it had only three. Bashaw does have a coin laundry but in Camrose there are seven laundries and dry cleaners. Travel-agents, photographers, florists, second-hand stores, motels, drive-in restaurants and other specialized services are usually found only in large centres.

More important, banking facilities are now concentrated mainly in large places. Camrose and Wetaskiwin have four banks and there are four finance companies in the former. Branches of nation-wide retail firms - supermarkets and department stores - are concentrated in the larger population centres. Clothing, in particular women's clothing, is no longer obtainable in most small centres. Veterinarians, optometrists, dentists, chiropractors and other professional people have offices only in the large centres, and these centres also monopolize wholesale trade.

The small centres are losing trade because the large centres monopolize the supply of "higher-order" commodities which are essential to modern agriculture and rural households. Rural residents are forced to visit these centres, and once there they can purchase "lower-order" commodities as conveniently if not more conveniently than in small local centres.

Chapter 4

The Present Economy of Surveyed Trade Centres

The centralization of rural service has had a varying effect on the small trade centres, but before measurement of change is attempted, the present economic importance of the surveyed centres must be evaluated.

A. The Survey Data

Each interviewee was asked for the following information on his business: annual turnover, value of stock, annual profit, total number of workers, and weekly payroll. (see Appendix A.) The totals of each of these for each trade centre were calculated, giving five indicators of the relative importance of each of the ten centres.

To obtain the totals for each centre several estimating procedures were necessary. For instance, where the value of stock, payroll, or turnover fluctuated, or where an interviewee gave a certain range of values, an average value was allotted. Interviewees were asked to indicate within which range of values their annual profits fell (in order to avoid outright refusal of information). The category "Less \$2,000" was in all cases taken as \$1,500, while "Over \$10,000" was taken to be \$15,000, the few times it occurred. Part-time and seasonal workers were valued as worth half a full-time worker, and while it was difficult to estimate the extent of 'family help' this valuation, though arbitrary, was consistent. Fortunately, except in the case of profits, few estimations of this type were required.

A more serious deficiency of the survey method is the inability or unwillingness of the interviewee to divulge information. In

several instances businessmen could not give turnover or profit figures because they had not been in operation for a full year; in other instances interviewees could not or would not give the precise information requested. In such cases the missing figure (or figures) had to be estimated by referring to data on similar size businesses of the same type. In Bashaw there are several business types not found in the other nine centres: some data on a few of these were lacking and approximations were calculated on the basis of proportions, e.g., proportion of stock to turnover, or turnover to profit.

Interview surveys have inherent limitations because of error on the part of the interviewee, and his reluctance to give precise information, especially on financial matters. However by cross-checking the answers given by people in similar sizes and types of business it was possible to eliminate some of these deficiencies. The summation of the data given or estimated, for each centre, may further eliminate deficiencies for, as Leeming says, "Aggregation tends to reduce total error because some mutual cancellation can be expected."¹

B Measures of Economic Status

Data relating to the economic activity in the ten surveyed centres is presented in Table III.

The ten centres are arranged according to the values of their total turnover of goods and services. This order is repeated in the

1. F.A. Leeming, "Output Accounting Applied in a Small Area", Transactions, I.B.G., 36 (June, 1965), p. 74.

TABLE III

Statistical Data on the Economic Activity in Surveyed Trade Centres¹

TRADE CENTRES	NUMBER OF BUSINESSES SURVEYED	TOTAL ANNUAL TURNOVER \$	TOTAL VALUE OF GOODS IN STOCK \$	TOTAL ANNUAL PROFITS \$	TOTAL NO. EMPLOYED	TOTAL WEEKLY PAYROLL \$	AVERAGE TURNOVER \$	AVERAGE STOCK \$	AVERAGE PROFITS \$
Bashaw	43	2,901,000 (5)	475,100 (2)	260,000 (11)	117 (2)	4,995 (4)	67,465	11,049	6,047
Hay Lakes	15	839,000 (4)	102,000 (4)	82,000 (5)	28½ (1)	1,360 (1)	55,933	6,800	5,469
Mirror ²	12	616,000 (2)	84,700 (1)	60,000 (3)	20 (1)	380 (2)	51,333	7,058	5,000
Edberg	10	428,000 (3)	80,000 (1)	45,000 (2)	17 (2)	480 (1)	42,800	8,000	4,500
Ferintosh	9	404,000 (1)	63,800 (1)	27,000	16½ (2)	675	44,889	7,089	3,000
New Norway	11	368,000 (4)	60,000 (2)	38,000 (4)	15 (1)	200 (2)	33,455	5,455	3,454
Meeting Creek	6	300,000 (2)	42,700	22,500 (2)	8	100	50,000	7,117	3,750
Gwynee	3	145,000 (1)	18,000 (1)	7,000 (1)	7	200	48,333	6,000	2,333
Armena	1	60,000	6,200	3,000 (1)	1½ (1)	---	60,000	6,200	3,000
Bittern Lake	1	10,000	4,000	1,500	1	---	10,000	4,000	1,500

Source: Trade Centre Business Survey.

1. These data are based on surveyed businesses only. The figures in brackets refer to the number of estimations involved in the calculation of each total.

2. A large proportion of Mirror's turnover is contributed by the farmer's livestock marketing co-operative, which has a sub-office in Alix. Though its head-office is in Mirror much of its business takes place outside the centre, and if its turnover is subtracted from the total the remaining businesses in Mirror have a total turnover comparable to that of Ferintosh.

graduations of their total stocks and total employment. Arrangement according to total profits is similar, with the exception that New Norway's total is greater than that of Ferintosh. The ranking based on turnover, stock, and employment is probably the best indication of the relative status of each centre, and it corresponds closely with arrangement by profit and number of businesses. Profit totals are probably the least trustworthy but New Norway may be more important than Ferintosh as this index suggests — its population is larger (see Table II) and it has two more businesses. However the difference in economic importance is not great. The number of businesses is too crude an index for measuring slight differences.

Total payroll is not a good index because a large proportion of small centre businesses are owner or family operated and do not have a payroll as such. But it gives a rough indication of the employment possibilities in a centre. These are negligible in all the centres except Bashaw and Hay Lakes. The arrangement of centres according to payrolls has similarities with the arrangements according to the other indices. According to all these indices Bashaw and Hay Lakes are the most important of the ten centres while Armena and Bittern Lake are the least important. This is also the case with arrangement by functional complexity (see Table II).

Total turnover was considered the best single index of economic activity. Only in the case of Mirror (see Table II, footnote 2) is it in any way misleading. The turnovers of 22 of the 111 surveyed businesses had to be estimated, and because some business types occur infrequently adequate cross-checking was not possible for all

businesses. As a further test of its reliability as an index, turnover was correlated with number of businesses and with number of workers. One would expect a strong relationship to exist between these variables for each centre, especially as the businesses in them are generally similar in character. The number of businesses surveyed is accurately known and the total employment figures for each centre are reasonably accurate — interviewees had no hesitation in giving employment figures and estimations of part time work involved only a small proportion of the total work force.

Turnover totals were found to have a close correlation with both total employment and number of businesses: in both cases the coefficient of correlation (r) was +0.953, and both were significant at the 0.1 per cent level.² These high values of (r) suggest that turnover totals are reasonably accurate. But the correlation between population and turnover was low: (r) = + 0.765, significant at the 5 per cent level. A comparison of Tables II and III shows that Bittern Lake, Mirror, and to a lesser extent New Norway and Gwynee have small turnovers relative to the size of their populations. These four centres are to a greater degree "residential centres" than are the other surveyed centres. It is noteworthy that three of them are relatively close to a large centre, and Mirror is primarily a railway town. In contrast Bashaw, Hay Lakes, and Meeting Creek have larger turnovers than might be inferred from their population sizes. The economy of a trade centre is not

2. See Appendix C: (r) was tested by the Students' "t" test: the percentage probability that either value occurred "by chance" is only 0.1%. Expressed in terms of the coefficient of determination (r^2), 91% of the variation in turnover can be "explained" by change in the number of businesses, and change in the number in employment.

directly proportional to its population because not all residents may be active in its economy and the economy is supported by people resident outside as well as inside the centre.

The average turnover, value of stock, and profits of the surveyed businesses in each centre give some indication of the scale of operation of small centre businesses. (see Table III). Each average is highest in Bashaw and lowest in Bittern Lake, but only in the case of profits is there a strong relationship with the level of economic activity in the centre. Average profit tends to increase as the number of businesses and total turnover of the centre increase, thereby reflecting the advantages of spatial concentration. Low average profits (e.g. in Ferintosh, Gwynee, Armena and Bittern Lake) indicate the marginal nature of many businesses in the smallest centres. The low total weekly payrolls in the small centres are also indicative of the scale of business operations.

Average turnover and average stock are greatly influenced by the variety of business types in a centre. Insurance agencies, barber shops, and other service businesses may not carry any stock, profit margins differ for different goods, and some businesses by their nature have a higher dollar value turnover than others (e.g. machinery supply) though they may be less prosperous. The general similarities of average turnovers and of average stocks are more striking than their differences. Both are indicative of the general size of small centre businesses. As the functional complexities of trade centres diminish there is a general tendency for businesses to become smaller in scale and frequently they become less profitable to operate.

Chapter 5

Postal Revenue as an Index of Economic Activity

The gross annual revenues of post offices provide a basis for comparing small and large, surveyed and unsurveyed trade centres. The validity of the index is tested empirically, and it is used to compare the present status of trade centres and changes which have occurred in their economies.

A. Postal Revenue Data

As Howell Jones¹ points out, one of the difficulties in a "dynamic study of the urban hierarchy" lies in the need "to focus on both time and space." The establishment of "an available, but adequate index of centrality" is a basic problem. He postulates that postal revenue provides such an index, for in 1961 and in 1931 there was a close correlation between the postal revenue and the tertiary revenue of service centres of over 1,000 inhabitants in British Columbia.²

As an economic index postal revenue has several advantages over other published data. Tertiary revenue data are usually available only for large centres (with populations of 5,000 and over), and it has long been recognized³ that the size of a trade centres population is not necessarily a reflection of the centre's economic importance. The number of businesses in a centre is only

1. G.I. Howell Jones, Postal Revenue as an Index of Centrality, A paper presented at the Annual Meeting, Canadian Association of Geographers, Vancouver, May 29, 1965, p. 1.

2. Ibid., pp. 2 - 6.

3. For example, see: P.H. Landis, "South Dakota Town-Country Relations, 1901 - 1931", South Dakota Agricultural Experiment Station Bulletin, 274(1932)

a rough indication of its economy (see Table II), and available data on the number operating at past dates is generally unreliable (see Table XXII).

In the study-area, no rural service centre with more than grain elevators is without a post office (see Table II) and with its "low condition of entry" the post office continues to provide one of the basic functions of all but the most insignificant trade centres. The gross annual revenues of all Canadian post offices are published in the Annual Reports of the Postmaster-General, available from the latter part of the nineteenth century to the present. In contrast, the populations of small trade centres which are unincorporated are not listed in even the most recent census reports, and calculation of population change is often complicated by enumeration areas being changed from one census year to the next. (This is especially liable to occur in the case of a growing trade centre.) On the other hand postal revenues are expressed in "current dollars" and as the real value of the dollar changes from year to year the revenues of a post office in any two years cannot be compared unless they are converted to "constant dollars" using a price index, or expressed as a percentage of the total revenues of a group of post offices. But for any given fiscal year, past or present, the postal revenues of different centres are directly comparable.

The post office is used by all types of business, and by individuals of all religious and social groups, and post offices in general are less exposed to changes in social and economic practice than other establishments in a rural service centre. Thus post

offices have existed in the great majority of trade centres during this century while other establishments have become obsolete or are of recent origin. As well as this historical continuity, post office charges are standardized within national boundaries and, in a given year, it is valid to compare the revenues of post offices distributed over a wide area.

The gross revenue of a post office is contributed by trade centre residents and by people resident outside the centre. Both populations contribute "directly" by using postal services as individual consumers, and both contribute "indirectly" by supporting trade centre businesses which use these services. The greater part of the total gross revenue of Canadian post offices is contributed "indirectly" (i.e. by businesses as opposed to private individuals).⁴ As trade centre residents contribute "directly" and "indirectly" to the revenue of the centre's post office, postal revenue is not strictly an index of centrality (as tertiary revenue is not strictly an index of centrality — the town or village may not even be a "central place.") Postal revenue is rather an index of the economic activity within the centre, irrespective of central place considerations. The contribution from outside the centre would be a more accurate reflection of centrality but this component of postal revenue is not readily obtainable. However postal revenue reflects the amount of service provided by one function of a centre and as far as "pure rural service centres are concerned it is a reasonable indicator of centrality — certainly better than population.

4. Pers. comm., Public Relations Officer, Edmonton Post Office, July 8, 1966.

B Test of Validity

To test postal revenue as an index of economic activity in the study-area, correlation analyses of postal revenue data with data collected by survey (Table II) were undertaken.⁵ The correlation of postal revenue and population, and of turnover and population were also analysed.⁶

There was a much closer correlation between postal revenues and turnovers, for the ten surveyed centres, than there was between their populations and their turnovers. The coefficient of correlation (r) for \log^7 turnover with \log postal revenue was + 0.945, significant at the 0.1% level. Expressed as a coefficient of determination (r^2), 89% of the variation in postal revenue can be "explained by" the variation in the total turnover of other businesses in a trade centre. The coefficient (r) for \log turnover with \log population, for the ten centres was only + 0.765, significant at the 5% level, and (r^2) was only 59%. Furthermore the correlation coefficient (r) for \log employment and \log postal revenue, for the surveyed centres, was also high: +0.946 ($r^2 = 89\%$), significant at the 0.1% level. Howell Jones⁸ found a high correlation ($r = + 0.971$) between postal revenue and retail sales for centres in British Columbia ranging in size from approximately 1,000 to 17,000 inhabitants so it is assumed that the correlation coefficient (r) for postal

5. The survey was carried out in the summer of 1965 and the most up-to-date data on postal revenue and population, for 1963-64 and for 1961, respectively, were used. Working with data for different dates is not ideal but in this case it is unlikely to influence the calculations significantly.

6. Statistical techniques are explained in Appendix C.

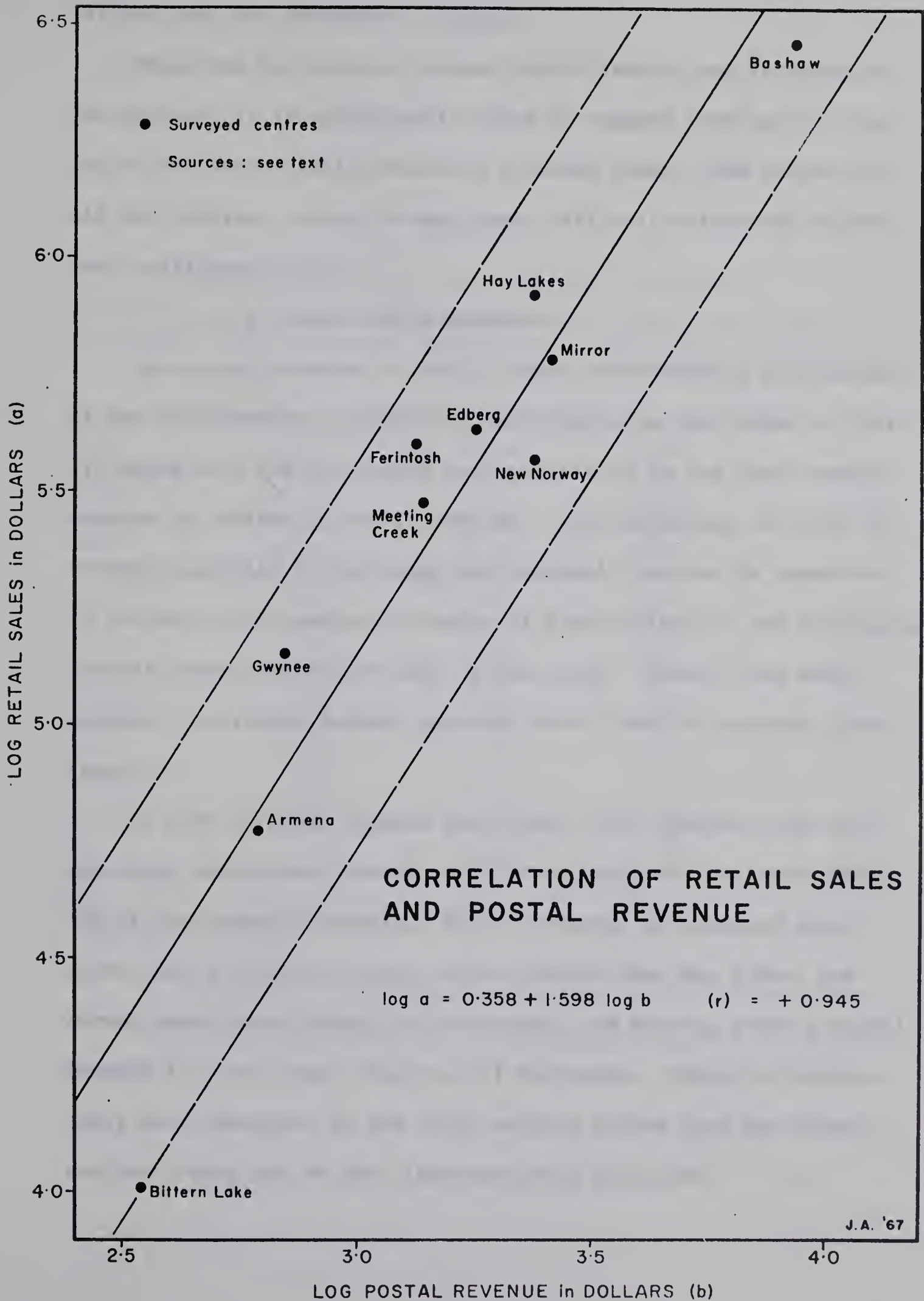
revenue and turnover for the large centres serving the study-area is also high. It would appear that postal revenue is a valid index of the economic activity in both large and small trade centres.

The correlation between postal revenue and turnover and the distribution of surveyed centres about the regression line and between the 95 per cent "confidence limits" is illustrated in Figure 3. Bittern Lake, Armena, New Norway, Mirror and Bashaw are below the regression line and have a smaller turnover relative to their postal revenues than centres above the line. The difference between the regression line values and the actual turnovers of Bittern Lake and New Norway are particularly striking. Bashaw is also below the line but the turnovers of several institutions (e.g. the hospital, bank, and Treasury Branch office) are not included in its turnover total, which is therefore somewhat larger than the figure used in these calculations (see Table III). The relatively small turnovers of Bittern Lake and Armena may be due to the fact that each has only one business (excluding grain elevators) besides a post office. New Norway's relatively large postal revenue may be partly due to the fact that New Norway post office is comparatively distant from other post offices — especially since Duhamel post office ceased to function — and while people in the New Norway trade-area may get many requirements in Camrose they continue to use New Norway for postal service. Gwynee, which is even closer to a large centre, has a larger turnover than might be inferred from its postal revenue, but Gwynee post office is relatively close to both the

7. The data were converted to logarithms to reduce the range of values, to facilitate the plotting of data about the regression lines (Figure 3)

8. Howell Jones, op. cit., pp. 3, 4, and Figure 4.

Figure 3



Bittern Lake and Wetaskiwin offices.

While the correlation between postal revenue and turnover is not perfect, it is sufficiently close to suggest that postal revenue is the best readily available economic index. The values for all the centres, except Bittern Lake, fall well within the 95 per cent confidence limits.

C Trade Centre Revenues

The postal revenues of the 17 trade centres which provide most of the requirements of people in the study-area, are shown in Table IV, along with the percentage each contribute to the total postal revenue of offices in all 17 centres. The difference in level of economic activity of the large and the small centres is immediately obvious: the combined revenues of post offices in the five large centres constitute 90 per cent of the total. None of the small centres, including Bashaw, approach their level of economic importance.

As with turnover figures (see Table III), Bashaw is the most important and Gwynee, Armena and Bittern Lake are the least important of the surveyed centres. But in contrast to turnover data, Mirror has a slightly larger postal revenue than Hay Lakes, New Norway ranks above Edberg and Ferintosh, and Meeting Creek's postal revenue is also larger than that of Ferintosh. Edberg is undoubtedly more important in the rural service system than New Norway, but New Norway may be more important than Ferintosh.

TABLE IV

Trade Centre Postal Revenues and Populations

TRADE CENTRE ¹	POSTAL REVENUE 1963-64 \$	REVENUE AS A % OF TOTAL	POPULATION 1961	RATIO OF REVENUE TO POPULATION ²
Camrose	90,978	27.56	6939	13.1
Wetaskiwin	64,352	19.49	5300	12.1
Stettler	49,488	15.00	3638	13.6
Ponoka	48,279	14.62	3938	12.3
Lacombe	44,006	13.33	3029	14.5
(% revenue of 5 large centres: 90.00)				
Bashaw	8,937	2.70	614	14.6
Alix	6,935	2.10	631	10.9
Donalda	3,562	1.07	289	12.3
Mirror	2,565	0.77	577	4.4
Hay Lakes	2,423	0.73	233	10.4
New Norway	2,386	0.72	263	9.1
Edberg	1,819	0.55	179	10.2
Meeting Creek	1,371	0.41	71	19.3
Ferintosh	1,305	0.39	174	7.5
Gwynee	697	0.21	109	6.4
Armena	615	0.18	32	19.2
Bittern Lake	345	0.10	76	4.5
TOTALS	330,063	100.00	26,092	12.6

Source: see text.

1. Trade centres are arranged according to their postal revenues.
2. The difference in dates is sufficiently small for the ratios to be meaningful.

D Postal Revenue and Population

The correlation coefficient (r) for log population and log postal revenue, for the surveyed centres, is low: (r) = + 0.792, significant at the 5 per cent level. But when data on the five large centres are included the coefficient (r) is higher: (r) = + 0.966, significant at the 1 per cent level. Howell Jones found that there is a "significantly higher correlation" between postal revenue and retail sales than between postal revenue and population (r) = + 0.971 and + 0.815, respectively), for centres of over 1,000 inhabitants in British Columbia. It can therefore be assumed that postal revenue is the better economic index for large and small centres, and population as an index of the economy may be especially inadequate in the case of the small centres.

Trade centre population size is not directly proportional to postal revenue (or to the total turnover of business in the centre) because people living outside the centre support the businesses and contribute indirectly and directly to its postal revenue, and the residents of small trade centres contribute to the postal revenues of larger centres. Thus the net contribution from outside varies with the centre.

If it is assumed, for the moment, that each trade centre resident contributes the same amount to the postal revenue of the centre, and that there is no outside contribution, then the ratio of postal revenue to population would be the same for all centres. But the ratios in fact vary (Table IV), and they vary mainly because of variation in net outside contributions.

The ratios indicate the extent of the net outside contribution, in proportion to the population size of the centre. The ratios for the five large centres range from 12.1 to 14.5, and those of Bashaw, Alix Donalda, Hay Lakes and Edberg range from 14.6 to 10.2. These centres all have relatively high net outside contributions in proportion to their populations. The ratios of the remaining seven centres vary widely. Mirror, Bittern Lake and Gwynee have very low ratios, and receive low net outside contributions in proportion to their populations — populations which reflect the important "residential" function of these centres. Meeting Creek and Armena have very high ratios, indicating large net outside contributions in proportion to population. These two centres have small populations and most of their postal revenues are contributed by rural residents. New Norway is to some extent a "residential centre" but its ratio is higher than that of Ferintosh.

The net outside contribution is not necessarily proportional to the centrality of the trade centre, because it is the outside contribution minus the contribution which residents of the centre make to the revenues of post offices in other centres. The outside contribution would be a good index of centrality, but it probably cannot be accurately determined. But the net outside contribution, if accurately calculated,¹⁰ would be a better index of centrality than the total revenue figure. It does reflect the general importance of centres as central places, because the contribution of the residents in one trade centre to the revenue of another is a reflection of the greater centrality of the latter centre. Thus Bittern Lake residents contribute to Camrose postal revenue but Camrose residents do not contribute, either directly or

indirectly, to the postal revenue of Bittern Lake. The net outside contribution to the postal revenue of a trade centre could be taken as an index of the "net centrality" of that centre.

10. The total gross revenue of post offices in Camrose County was calculated, and the total population contributing to this revenue was estimated (the total population of the county plus a small population outside the county who indirectly contribute, mainly to Camrose post office). From these totals the average per capita contribution to postal revenue in the area was found to be \$6. As the ratios for Bittern Lake and Mirror are less than 6 (see Table IV), the net outside contribution to their revenues may be a minus quantity — the centres' residents contribute more to outside postal revenues than people living outside Bittern Lake and Mirror contribute to the revenues of these two centres.

Assuming that rural and trade centre residents each contribute \$6 to the postal revenue of Camrose County, the net outside contribution to the revenue of centres in the area can be calculated using the formula: $X = P.R. - 6P$ where P.R. is the postal revenue of the centre and P is its population.

However, because the population contributing to Camrose County post offices could not be accurately ascertained the estimated \$6 was not utilized and net outside contributions were not calculated. If an accurate per capita figure was obtained this method could be used to provide an index of "net centrality". But some allowance might have to be made for possible differences in the per capita contribution of trade centre and rural residents. The latter may make a higher per capita contribution because some trade centre businesses are exclusively farmer-oriented.

Chapter 6

Trade Centre Areas of Influence

The trade-area of each surveyed business was delimited and the approximate area served by each surveyed trade centre, and the areas of influence of large centres near the study area are shown in Figure 4.

A. Trade-Area Delimitation

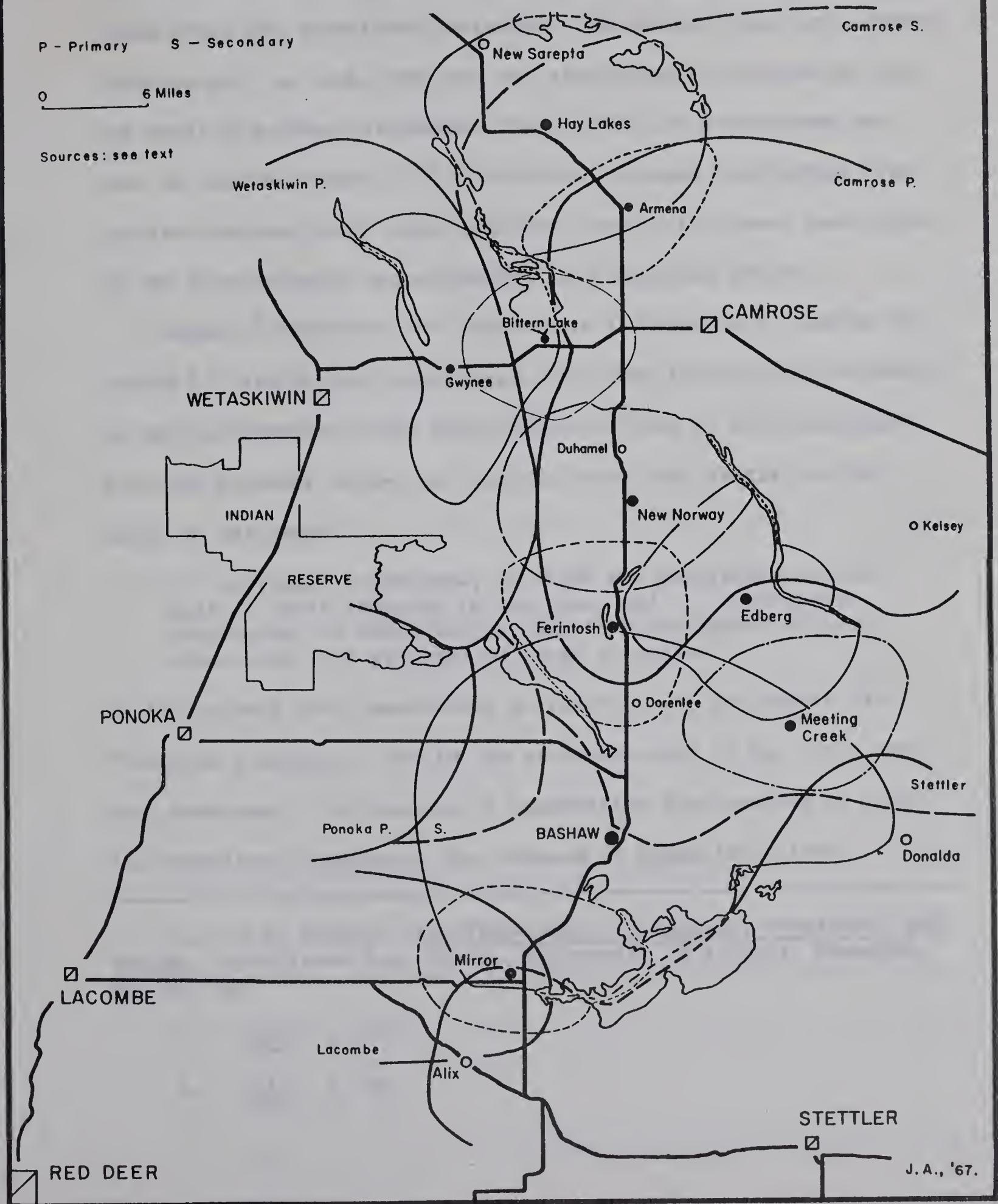
Businessmen were asked to outline their trade-areas on a map showing the name of the owner of each quarter-section of land; boundary lines were drawn so as to encompass the locations of their regular customers while excluding areas where all or most of the inhabitants go elsewhere for service. This method appeared to be satisfactory for in a small centre the businessmen usually know the majority of their customers personally; in the Rural Household and Farm Survey area the trade-areas delimited by businessmen corresponded with the trading practices of rural interviewees, and only a few boundary lines required slight amendments.¹

The boundary lines for all surveyed businesses were transcribed onto a single map, and it was seen that the various trade-areas of a centre are generally similar in shape. For each of the ten surveyed centres, the middle line at points in various directions from the centre was noted and these points were joined by a smooth line. These "median lines" are shown in Figure 4. A median

1. Exaggerations tend to be in the same direction from a centre and maybe reflect the hopes of the businessmen concerned. Thus some Bashaw hardware dealers and service station operators overestimated their trade-areas by about two miles in the Donalda area, and New Norway service station operators exaggerated the extents of their trade-areas towards Ferintosh.

Figure 4.

TRADE - AREAS



line was preferred to a mean line as the most representative approximation of a centre's hinterland; in the calculation of the mean, extreme values (e.g. an unusually large and perhaps exaggerated trade-area) are excessively stressed. The median lines are generalizations and, as such, they are not significantly affected by the few small discrepancies between the evidence of businessmen and that of rural residents. It is therefore assumed that median lines outside the area where rural residents were interviewed (see Figure 2) are also reliable approximations of trade-area extent.

Rendall² delimited the trade-areas of Wetaskiwin, Camrose and Ponoka by interviewing businessmen, and then interviewing consumers on the peripheries of the trade-areas outlined by the businessmen. From the consumer survey he concluded that each centre had two zones of influence:

... a primary trade-area, in which all people did all or most of their shopping in the town, and ... a secondary trade-area, in which people used the town mainly to purchase goods not provided in local villages.³

In the primary zone immediately surrounding it, the centre has "complete dominance,"⁴ but in the secondary-zone it has "only partial dominance", not because of competition from centres of similar functional complexity, but because of competition from

2. H.A. Rendall, The Trade Areas of Camrose, Wetaskiwin and Ponoka, unpublished M.A. thesis, University of Alberta, Edmonton, pp. 25, 26.

3. Ibid., p. 26.

4. Ibid., p. 95.

"... smaller trade centres which offer a less complete line of goods and services but are capable of satisfying the basic needs of rural families."⁵ The primary and secondary zones of Camrose and Ponoka, and the primary zone of Wetaskiwin (it has no secondary zone in the study area), as delimited by Rendall,⁶ (Figure 4) correspond closely with the evidence of the Rural Household and Farm Survey.

The trade-areas of Lacombe and Stettler were delimited from Rural Household and Farm Survey data, and, by Rendall's definition, their primary zones do not extend as far as the study area. Rendall⁷ found that the trade-areas of grocery stores generally correspond closely with a centre's secondary zone; the locations of interviewees who buy some of their food requirement in Lacombe or Stettler, were therefore plotted. However some interviewees who do not buy food in these centres do visit them at regular intervals for other commodities; the locations of those who visit Lacombe and Stettler for banking and automotive and machinery servicing were therefore recorded. Trade-area lines for Stettler and Lacombe were drawn so as to encompass those areas where the majority of interviewees get some or all of the above mentioned goods and services in the respective centres.

No interviewee visits Red Deer for banking or machinery servicing and only one (just north of Mirror) buys food and automotive servicing there. Red Deer's influence in the survey area is confined to the collection of milk products (six interviewees), and sales of

5. Ibid., p. 95.

6. Ibid., Figure 6 - Trade-areas delimited by consumer survey.

7. Ibid., p. 45.

automobiles (4), farm machinery (3) and appliances, furniture and clothing (6), along the western periphery of Bashaw's trade-area. As the distribution of the few interviewees who trade in Red Deer is sporadic it can be concluded that its seceondary trade-area does not extend as far as the study area.⁸

B Trade-Areas of Different Functions

Rendall⁹ found that "time-distance" is the main determinant of the shape and extent of Camrose, Wetaskiwin and Ponoka trade-areas,¹⁰ and that "drawing power" has "a strong modifying influence on the effect of distance." Drawing-power, he decided,¹¹ can most effectively be indicated by the total number of different types of goods and services available in a centre.

The "threshold populations" of different types of businesses - the minimum number of clients for them to maintain economic viability - vary, because some commodities are purchased less frequently than others, profit margins differ, scales of operation differ and the "range" of commodities varies widely. Businesses with a low threshold population (e.g. those selling commodities required at frequent

8. This conclusion corresponds with evidence presented by Baker: A.M. Baker, The Red Deer Region, 1962, unpublished M.A. thesis, University of Alberta, Edmonton, Figure 3 and Appendix, p. 153: the trade-area of the Red Deer daily newspaper did not extend as far as the study-area, that of wholesale grocers extended only as far as Mirror, while the Red Deer milk shed reached to just north of Bashaw.

9. Rendall, op.cit., p. 96.

10. For example, the primary trade-areas correspond fairly closely with the 25 minute isochrones for these centres (p. 69 and Figure 20). The isochrones are based on driving speeds of 60 m.p.h. on paved roads and 45 m.p.h. on gravel roads (p. 65, footnote 3).

11. Ibid., pp. 71 - 73.

intervals) tend to be found in most trade centres and generally have relatively small trade-areas. Conversely, those with a high threshold population (e.g. those whose services are required infrequently, or establishments which must be large-scale because the commodities they provide have a low profit margin or a long 'range') tend to be found in fewer trade centres and have larger trade-areas. There is thus a relationship between the degree of centralization of a function and the extent of its trade-area.

During survey it was seen that the more widespread functions (see Table II) generally have the smallest trade-areas. Bulk fuel delivery trade-areas¹² and the trade-areas of most food stores are generally small — smaller than respective "median" trade-areas.

From the Rural Household and Farm Survey post offices were seen to have small trade-areas, and grain elevators have small catchment areas.¹³ Farm machinery and automotive servicing businesses are also relatively decentralized but their trade-areas tend to be larger and overlap to a greater extent. This is at least partly due to the fact that only some have agencies. Hotel trade-areas are generally larger than respective "medians"; New Norway, Ferintosh and Hay Lakes hotels serve wider areas than do the hotels in Edberg and Meeting Creek, perhaps because the latter are not on Highway 21.

12. The trade-areas of Gwynee and Armena for bulk fuel delivery are larger than their respective trade-areas for food supply. Bulk fuel has a low value/weight ratio and therefore relatively expensive transport costs. The fuel depots in Gwynee and Armena have withstood competition from Wetaskiwin and Camrose more successfully than the food stores.

13. Rendall, op.cit., p. 50.

In Bashaw the functions with the largest trade-areas are those not found in other small centres: the pharmacy, the hospital, the clothing shops, the auction mart and the finance companies attract clients from beyond the Bashaw median trade-area.

Trade-area extents also reflect some functional specialization in various centres. Thus New Norway and Meeting Creek have relatively large automotive servicing trade-areas but Edberg has a very small one. In farm machinery servicing, Ferintosh and Mirror have very small trade-areas, but Edberg, which has an agency, draws clients from an extensive area. It also has an extensive hardware trade-area, reaching to beyond Meeting Creek which no longer has a hardware store. Trade-areas of Bashaw businesses are generally larger than those of their counterparts in the other small centres; this is partly due to the greater specialization in Bashaw but it is also due to the greater drawing power of the centre. Bashaw businesses benefit indirectly from their proximity to "higher order" establishments, such as the hospital and the auction mart, which have large trade-areas.

Food store trade-areas reflect the difference between the purchase of day-to-day needs and the purchase of food in large quantities. The small centres, with the exception of Bashaw, have small food supply trade-areas, suggesting that they rely mainly on trade in frequently required groceries, in which the convenience factor is very important. Two of the six food stores in Bashaw also have very small trade-areas but the median area served by Bashaw stores extends as far as Ferintosh, Meeting Creek, Donalda

and Mirror, and people in these outlying areas buy food in quantity from Bashaw stores at weekly or less frequent intervals. Proximity to the food store is not all-important in the buying of "weekly groceries."

The trade-areas of grocery stores in Camrose, Wetaskiwin and Ponoka correspond to their secondary and not their primary zones. Rendall¹⁴ suggests that people in the primary zone "... purchase all of their groceries in the town", and that people in the secondary zone get some groceries in small local trade centres "for the sake of convenience." This is a misleading over-simplification. Residents in the Camrose primary zone do not purchase all their groceries in Camrose: some food is obviously purchased in the food stores of New Norway, Ferintosh and Armena. Large centre stores "offer a more varied, fresher and cheaper assortment of groceries ..." ¹⁵ and people in both primary and secondary zones take advantage of this, but in both zones the local stores are visited for day-to-day needs. Because they are closer to the large centre, primary zone residents generally purchase more in large centre stores and several Bashaw stores now provide a similar service for residents outside the primary zones of large centres. While food supply remains one of the most localized community services, much of the food trade is now centralized in large centres, and in a few small centres in or beyond secondary zones.

As the median trade-area of a centre is a generalization of the trade-areas of all its functions, there is a relationship be-

14. Ibid., pp. 46, 47.

15. Ibid., p. 47.

tween the range of functions in a centre and the extent of its median trade-area. Businesses with a high threshold population tend to locate close together for their mutual benefit and lower-order functions also benefit from proximity to them. It is this tendency which produces variation in the functional complexity of trade centres and an hierarchical order of central places. Thus the larger the trade centre the greater the threshold population necessary to support its economy, and the larger its trade-area will tend to be.

C The Size and Shape of Trade-Areas

The area enclosed by each median line (see Figure 4) was estimated to the nearest square mile, water bodies excluded:¹⁶

TABLE V — ESTIMATED SIZE OF MEDIAN TRADE-AREA¹

Trade Centres	Square Miles
Bashaw	402
Hay Lakes	163
Mirror	85
Edberg	116
Ferintosh	90
New Norway	123
Meeting Creek	95
Gwynee	98
Armena	64
Bittern Lake	60
1. Trade centres arranged in order of total turnover of business.	

16. One section of land equals one square mile; portions of a section greater than half were counted as full sections, portions less than half were ignored

These figures were compared with the statistical data on trade centre economies (Table III). Both in turnover and trade-area size Bashaw and Hay Lakes rank highest and Armena and Bittern Lake rank lowest; and each of the large centres has a larger trade-area than Bashaw. But there is a great divergence between the relatively large turnover of Mirror and its small trade-area, and Gwynee has a slightly larger hinterland than either Ferintosh or Meeting Creek both of which have over twice as large a turnover, and a greater number of functions.

Obviously trade-area size is related to turnover and functional complexity only in a very general way. The populations of the trade centre, the population density in surrounding rural areas, and the trading practices of the trade-area's population are important determinants of the centre's economic importance. Trading practices (and hence trade-areas) are influenced by the distance to competing centres and the strength of their competition.

While "local geographical differences" may, as Rendall¹⁷ suggests, be of only minor importance in determining trade-area size and shape, they appear to have a greater influence on the trade-areas of the smaller centres. Lakes constitute the only major obstacle to movement in the study area and they are important in as far as they influence the transportation system, and hence the relative accessibilities of competing centres. Since the small centres are closer together such obstacles have a greater effect on their relative accessibilities.

Thus lakes form parts of the boundaries of the Bashaw, Mirror, Ferintosh, New Norway, Edberg, Gwynee and Hay Lakes trade-areas.

17. Rendall, op.cit., p. 96.

Driedmeat Lake curtails the eastward extent of Edberg's trade-area, New Norway's area is bounded on the north by the valley through which the Battle River flows, and the area north of Gwynee is hemmed in to east and west by lakes, which accounts, in part, for the extension of Gwynee's trade-area in this direction. Buffalo Lake restricts Bashaw's zone of influence on the south-east, but it also has the effect of increasing the distance of the Bashaw area from Stettler, and thus serves to protect Bashaw from the competition of the larger centre. Farmers on the western side of Red Deer Lake transport grain in winter over its frozen surface to Ferintosh, but the lake is the effective western boundary of the Ferintosh trade-area. And farmers who live closer to Ponoka than to Bashaw continue to haul their grain to Bashaw, because in the days of horse-drawn wagons they wished to avoid the steeper gradients on the road to Ponoka.

D Trade Area Populations

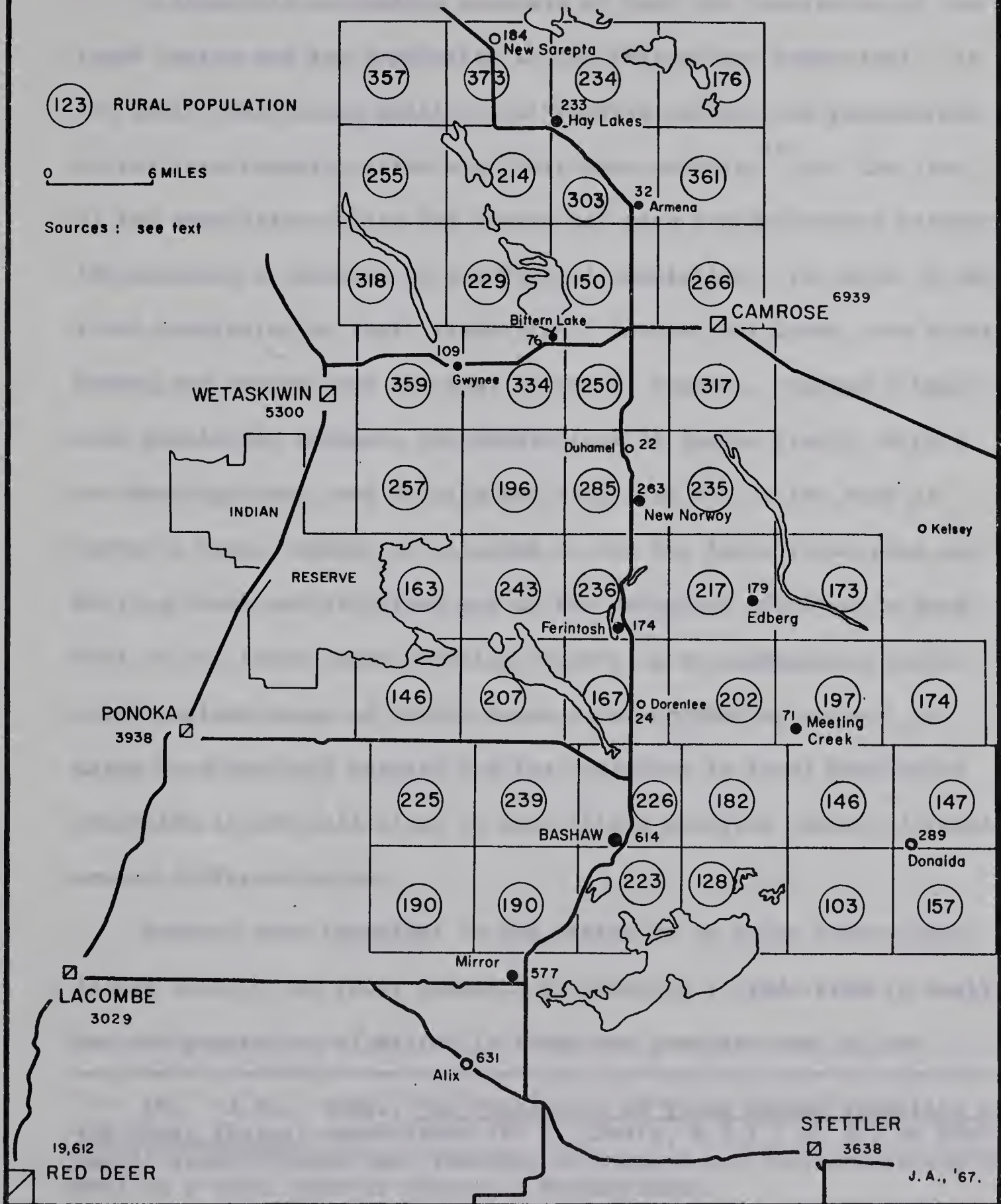
The total population within the trade-area of each centre cannot be accurately calculated because trade-area boundaries cut across enumeration areas. However population by townships is shown in Figure 5.¹⁸ Comparison with Figure 4 gives some indication of the distribution of population relative to trade-areas.

Rural population density is relatively high throughout the study area, though there is some variation. Rural densities are highest around New Sarepta, Hay Lakes and Armena, in the New Norway area and in areas between Gwynee and Camrose. The area south of

18. Dominion Bureau of Statistics, Census of Canada, 1961, and unpublished data supplied by the Dominion Bureau of Statistics.

Figure 5

POPULATION, 1961



Ferintosh, in fact the greater part of Bashaw's trade-area, is less densely settled, especially towards the east, where the soil changes from "black" to "thin black."

A threshold population consists of both the population of the trade centre and the population in the rest of the trade-area. As the small centres are mainly rural service centres the populations of their surrounding areas are their main support,¹⁹ but the size of the population within the centre may mean the difference between the presence or absence of a threshold population. In terms of the total population of their trade-areas, Bashaw, Hay Lakes, New Norway, Edberg and Gwynee have the most potential support. Bashaw's trade-area population includes the populations of Bashaw itself, Mirror and Meeting Creek, and Donalda and Ferintosh are on the edge of Bashaw's area. Armena is situated in the Hay Lakes trade-area and Meeting Creek and Ferintosh are on the periphery of Edberg's zone. Most of the trade-areas (Meeting Creek's is an outstanding exception) include areas of fairly dense rural population as well as areas more sparsely settled and the variation in rural population densities is not sufficient to make this a powerful factor of trade centre differentiation.

Perhaps more important is the variation in trade centre population sizes. The rural population in Mirror's trade-area is small, but the population of Mirror is large and provides much of the

19. J.F.G. Hodge, The Prediction of Trade Center Viability in the Great Plains, unpublished Ph. D. thesis, M.I.T., p. 32; on average it takes fifteen farm families to support one business establishment in a rural service centre in Saskatchewan.

support for businesses in the centre. New Norway and Gwynee also have large populations in relation to their commercial importance, and these populations provide a significant part of the support of their businesses. In contrast Meeting Creek and Ferintosh have relatively small populations and suffer because of this.

Yet Bashaw has grown despite the relatively low density of the surrounding rural population and while Gwynee trade-area has a relatively large population that centre has only a small turnover. The economic importance of a trade centre depends on the trading practices of the population using the centre, as well as on the size of that population. In the study area, the spatial arrangement of trade centres is more important than population distribution as a factor of trade centre differentiation.

E Relative Locations

The trade-areas of Bittern Lake, Armena, Gwynee, Ferintosh and New Norway are entirely or largely within the primary zones of Camrose or Wetaskiwin, while Bashaw, Hay Lakes, Donalda, Mirror, New Sarepta, Edberg and Meeting Creek are in or beyond the secondary zones of large centres. All of the latter group of centres, with the exception of Meeting Creek, have a higher turnover than the centres in the first group: they are in a better situation to compete with large centres. Meeting Creek has a smaller turnover than either Ferintosh or New Norway, and as well as having a small trade-area population, it suffers from the competition of other small centres. Over half its trade-area is overlapped by the trade-area of Bashaw, about one-third of it is overlapped by Edberg's trade-area, and Donalds also competes in the Meeting Creek district.

Bashaw benefits from a central location in relation to large centres but a central location can also be a disadvantage if surrounding centres are relatively close and have greater drawing power. Thus Ferintosh is situated between Camrose and Bashaw and suffers from both, as well as having to face competition from New Norway and Edberg. Mirror is located between Bashaw and Alix, Lacombe and Stettler; all four centres compete for trade in the Mirror area and this accounts, in part, for the lack of rural services in Mirror. It is noteworthy that the extinct centres Lamerton and Viewpoint, and also Dorenlee, are within the trade-areas of two small centres, and Duhamel is very close to New Norway and is inside the Camrose primary zone.

It can be concluded that distance from large centres is the main factor behind the variation in small centres, and that distance from small rivals is a secondary factor. Small centres close to large have small turnovers (even if their trade-areas are fairly large), and small centres beyond the primary zone of a large centre may have relatively large turnovers.

Chapter 7

The Trading Practices of a Sample of Rural Residents

The Rural Household and Farm Survey gave an additional perspective on the rural service function of trade centres, including that of centres not covered by the Trade Centre Business Survey. Enumeration of functions and delimitation of trade-areas indicate the importance of rural service, but the sample survey of rural trading showed the use made of a trade centre by the rural population within its trade-area – the intensity as well as the extent of its service.

The 117 rural households surveyed have trade-linkages¹ with a total of twenty-five trade centres, making a total of 592 trade-linkages (each household on average trading with approximately five centres). The distribution of trade-linkages by accessibility zone, and the present quality of these linkages are analysed, and the strong influence of the accessibility factor on trading patterns is verified by a statistical test.

A. Trade-Linkage Distributions

The number of surveyed households in each zone of each trade centre, and the number which have a trade-linkage with the centre is shown in Table VI. Though the quality of the linkages varies greatly, this table does give a general impression of the relative centrality of the centres. Linkages may be for the past only

1. For an explanation of trade-linkages and treatment of survey data see: Appendix D; Chapter 2, Section B.

(e.g. with the defunct centres, Lamerton and Viewpoint) but the great majority of linkages relate to the present as well as to the past.

The proportion of surveyed households with a trade-linkage decreases as the accessibility of the centre decreases. The rate of decrease varies for different centres, and the outermost extent of their influence varies. Thus the five large centres nearest the study area (group B) all have linkages in zones 7, and four have linkages in zones 8; Bashaw does not have significant trade beyond zone 6, and group D centres have even smaller areas of influence. Zones 6 (20 to 28 highway-miles, or the equivalent on unpaved roads)² are the outermost zones of the group B centres which do not overlap in the survey area. Virtually all surveyed households in zones 6 of these centres have a linkage with the respective centre, but in zones 7 the proportion decreases sharply, except in the case of Camrose. This suggests that the maximum effective extent of the service of these centres is generally 28 to 38 highway miles from the centre.

Edmonton and Calgary provide rural interviewees with seven and three categories of goods and services, respectively, of which live-stock marketing is easily the most important (over fifty of the seventy-eight Edmonton linkages are for this service only). Red Deer's service to the area is only slightly less limited.

In group C Bashaw is strongest in terms of linkage distribution though Donalda, by virtue of its creamery collection service, has

2. See Table I.

TABLE VI: The Distribution of Surveyed Households (SH) and Trade-Linkages (TL) by Accessibility Zones.

TRADE CENTRE	Zone 1		Zone 2		Zone 3		Zone 4		Zone 5		Zone 6		Zone 7		Zone 8		Zone 9	
	SH	TL	SH	TL	SH	TL	SH	TL	SH	TL	SH	TL	SH	TL	SH	TL	SH	TL
A. Edmonton																	117	78
Calgary																	117	8
Red Deer																8		7
Camrose									2	2		18	18		15	22	y	y
Wetaskiwin																40	56	4
Ponoka									6	6		18	16		34	-	13	-
Lacombe												5	5		28	2	57	-
Stettler												14	11		53	5	24	2
Bashaw	5	5		9		13	13	19	35	29		25	12		x	1	-	-
Donalda	5	5		4		3	3	3	15	12		19	6		x	11	-	-
Alix				1		3	3	6	9	3		21	4		x	1	-	-
Mirror	6	6		3		2	1	6	17	-		-	-		-	-	-	-
Edberg	6	6		5		8	8	15	16	4		-	-		-	-	-	-
Ferintosh	6	6		12		8	4	20	39	1		-	-		-	-	-	-
New Norway	2	2		5		8	3	12	18	1		-	-		-	-	-	-
Meeting Creek	6	6		6		13	10	15	28	2		-	-		-	-	-	-
Doreenlee	8	6		8		-	-	-	-	-		-	-		-	-	-	-
Kelsey						1	1	2	10	2		-	-		-	-	-	-
Viewpoint	3	3		2		-	-	-	-	-		-	-		-	-	-	-
Lamerton	6	5		4		-	-	-	-	-		-	-		-	-	-	-
Tees				3		2	1	8	7	-		-	-		-	-	-	-
Clive								3	7	1		-	-		-	-	-	-
Red Willow								3	6	1		x	1		-	-	-	-
Rosalind								1	9	2		-	-		-	-	-	-
Ohaton									3	2		-	-		-	-	-	-

x: the number of surveyed households in these trade centre zones was not calculated.

y: zone 9 - Camrose - all surveyed households are within eight zones (i.e., 50 highway miles) of Camrose. Blank cells indicate that the trade centre zone does not extend as far as the survey area.

more widely distributed linkages. Group D centres have linkages with practically all interviewees in zones 1 and 2 (within seven highway-miles of the centre) but they do not have significant support from beyond zones 4 (beyond fourteen highway-miles). Edberg is strongest and Mirror is weakest by this criterion. Dorenlee's trade-area extends little more than four highway-miles from the centre, and Kelsey (situated outside the study area) has a linkage distribution comparable to those of group D centres.

Group G centres, which lie outside the study area, have a total of only eight linkages and as they do not present much competition to surveyed centres it is convenient to exclude them, along with Lamerton and Viewpoint, from further analyses.

B Statistical Tests of the Accessibility Factor

A centre's service to its trade-area is not homogenous throughout that area: the accessibility factor influences trading patterns within a trade-area as well as influencing trade-area extent. The relationship between the accessibility of a centre and the use made of its various services is tested by the chi-squared test,³ and associations between other trade-linkage variables are also tested. Conclusions are drawn from tests on five groups of linkages, and are valid within the framework of classification schemes and assumptions regarding levels of significance of chi-squared values which are outlined in Appendix D.

Variable 3, the accessibility of the trade centre to the rural household, was paired with variable 4 to 42 inclusive.⁴ For the six

3. See Appendix D.

large centres nearest the survey area (group B centres plus Red Deer), there is an association between accessibility and thirty-two of these thirty-nine variables: significant at the 0.1 per cent level for eight (including shopping trip frequencies and expenditure), at the 1 per cent level for nineteen, and at the 5 per cent level for five. Four items were not provided to interviewees by any of the six centres, and the fact that values for three variables were not significant at the 5 per cent level can not be construed as independence as very few interviewees trade in a large centre for the three commodities involved.

It can therefore be concluded that there is a highly significant relationship between the accessibility of the trade centre and the use made of its service by rural residents.

As a further test of this association, chi-squared data for four other groups of linkages (New Norway, Meeting Creek, Edberg and Ferintosh; Bashaw; Edberg separately; and Camrose separately) were also evaluated. Associations are again significant, and where some are less significant than was the case with the six large centres, this can be traced to the nature of the samples. Thus the smaller centres do little trade in such commodities as clothing, construction materials, or livestock, and the insignificance of associations is due to the small numbers involved. Yet in the case of even the smallest centres none of these variables can be said to

4. Variables 4 to 31 are twenty-eight classes of goods and services, variables 32, 33 and 35 concern trip frequencies and expenditure, variables 34 and 36 concern recent change in trips and spending, and variables 37 to 42 concern pre-1945 trade in six commodities. (See Appendix D)

independent of the accessibility factor. It has paramount importance in influencing rural trading patterns and the character of the rural service system.

Two variables refer solely to change. For the six large centres, and for Camrose separately, there is a highly significant (at the 0.1 per cent level) association between accessibility and change in trip frequency, and for Bashaw this association is significant at the 5 per cent level. For the four small centres (in group D) and for Edberg separately the association is less significant, but while interviewees are visiting the large centres and Bashaw more frequently than formerly, many continue to visit these small centres with unchanged frequency. There is also a significant association between accessibility and change in percentage expenditure: significant at the 0.1 per cent level for the four small centres (where interviewees now spend considerably less than formerly), and significant at the 5 per cent level for the six large ones (which now get an increased share of rural expenditures). Where increased use is being made of a centre, the increase tends to be concentrated fairly close to the centre and diminishes as distance from the centre increases. Conversely where a centre is losing rural support the loss tends to be greatest near the outer edge of its trade-area.

The associations between accessibility and pre-war trade patterns for six commodities often lack significance, because data on this trade was incomplete and the large centres had only a small share of the trade. For the four small centres the association

with blacksmith service was highly significant (0.1 per cent level), and the associations between accessibility and the other five variables were also significant. The accessibility factor was just as powerful then as now and may have been more powerful as the "friction" of distance was greater and rural residents lacked their present mobility.

As might be expected, there is a significant association between the size and the annual net profit of farms. As data on farm size is perhaps the more reliable farm size was taken as an index of the circumstances of rural interviewees — all but two of whom are farmers. There is no association between farm size and the frequency of trips to any of the trade centres, nor is there any association between farm size and trade in specific commodities. It can be concluded that the use made of trade centre services is independent of farm size, and, by implication, of the material circumstances of the rural household. With this elimination the importance of the accessibility factor appears all the greater.

For all five groups of linkages there is a highly significant (0.1 per cent level) association between the frequency of trips to a centre and the use made of the centre for certain commodities: groceries in all the centres, farm machinery servicing and banking in the large centres and in Bashaw, and mail collection in the four small centres. It cannot be concluded that there is a direct causal relationship between trip frequencies and trade in any one of these commodities,⁵ but it is suggested that trip frequency is a useful

5. In most cases a centre's attraction for rural residents depends not on one but on several or all of its functions.

indicator of the use made of trade centre facilities. The association between trip frequency and percentage expenditure is highly significant for all five linkage groups.

C Analysis of Trade-Linkage Quality

The linkages were analysed to show the present degree of use made of particular centres and present trading patterns in specific commodities. Data on the support of functions in eighteen trade centres (the centres in groups A, B, C, D and E - Table VI), by interviewees who have a trade-linkage with the respective centres, were tabulated by accessibility zone.

The trade-linkages of each centre were processed separately on the computer; variable 3 (zone) was cross-classified with variables 4 to 42, inclusive, (see Appendix D) and thirty-nine tables were obtained for each centre. This gave a total of 702 tables. For a given centre and a given variable the table showed the percentage of the trade-linkages in each zone of that centre which correspond to each category of the variable. Thus the trip-frequency table for Bashaw (v. 3 and v. 32 in the trade-linkages of Bashaw cross-classified) showed that 100 per cent of the interviewees in zone 3 - Bashaw, who have a trade-linkage with Bashaw, visit Bashaw for shopping one or more times per week; the Meeting Creek trip-frequency table showed that only 20 per cent of the linkages in zone 3 - Meeting Creek occur in the "one or more times per week" category. Clearly Bashaw has the greater drawing power. In addition all interviewees in zone 3 - Bashaw have a linkage with Bashaw, whereas only ten of the thirteen interviewees in

zone 3 - Meeting Creek have a linkage with Meeting Creek (Table VI). As three do not have a linkage with Meeting Creek, the difference in drawing-power is even greater than a comparison of linkage percentages would suggest.

The percentages of trade-linkages in each category are exact (corrected to the nearest whole number), but they may refer to only a part of the sample - the surveyed households in the zone which have a trade-linkage.⁶ The proportion of surveyed households which have a linkage can be seen from Table VI.

The linkage quality data in the 702 tables obtained from the computer were analysed and condensed into sixty-seven tables, thirty pertaining to recent change in trade, thirty-one pertaining to present trading, and six pertaining to pre-1945 trade. (see Appendix D). Each of the thirty-one tables on present trade concerned one variable: twenty-eight concerned specific commodities, two concerned shopping trips and one concerned expenditure. Each table showed the percentage of linkages in each zone of the eighteen trade-centres which occur in each category⁷ of the particular

6. Where an interviewee with a linkage does not trade in a particular commodity in any centre, or where the information given on a particular variable was unsatisfactory, that linkage was excluded from the computation of that table. (See Appendix D)

7. In order to present data on one variable for all eighteen centres, the variable categories on which the chi-squared tests were based were regrouped into fewer categories (see Appendix D). Some precision was lost by adopting this expedient but this was more than compensated by the greater facility of comparison; and reference was made to the data as initially classified.

variable. Thus the present drawing powers of the eighteen centres can be compared.

Trip frequency and percentage of total expenditure are the two most important variables of trade centre use. They are the only variables common to all eighteen centres (as far as rural interviewees are concerned) and together they provide a comprehensive statement of the drawing power of each centre. All interviewees gave satisfactory information on trip frequency and this data is probably the more reliable. One hundred and three (88 per cent) of the 117 interviewees replied to the question on the percentage of their total expenditure spent in each centre. Because this is not so easy a question to answer, this data may be less reliable, but the general conclusions reached on allocation of expenditure are valid.

D Present Shopping Trip Frequencies

Trips to Edmonton and Calgary are very infrequent, many linkages being in the "less than twice per year" category (Table VII). Red Deer, being closer to the survey area, is visited more frequently but few interviewees go there as often as once every two months. Of the large centres Camrose has strongest drawing power throughout the survey area and significant proportions of the linkages in zones 5 and 6 of Camrose, and of Ponoka, are in the "one or more times per week" category. No interviewees beyond thirty-eight highway-miles from a centre (i.e. in zone 8 and 9) visits that centre at weekly intervals, and only in zone 7 of Camrose and Wetaskiwin are there linkages (and those a small proportion of the total) in the "weekly" category. Lacombe and Stettler have less extensive support

TABLE VII Shopping Trip Frequencies and Accessibility

	Zone 1			Zone 2			Zone 3			Zone 4			Zone 5			Zone 6			Zone 7			Zone 8			Zone 9		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Edmonton	100	-	-	100	-	-	100	-	-	53	42	5	35	27	38	-	23	77	-	-	-	-	-	-	-	5	50
Calgary	83	17	-	33	67	-	100	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25
Red Deer	100	-	-	100	-	-	38	50	12	6	47	47	-	-	100	-	-	-	-	-	-	-	-	-	-	-	100
Camrose	33	50	17	55	18	27	25	-	75	-	33	33	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
Wetaskiwin	100	-	-	80	-	20	-	67	33	-	100	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
Ponoka	100	-	-	83	17	-	20	50	30	-	50	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
Lacombe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stettler	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bashaw	-	-	-	100	-	-	100	-	-	53	42	5	35	27	38	-	23	77	-	-	-	-	-	-	-	-	100
Mirror	83	17	-	33	67	-	100	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Edberg	100	-	-	100	-	-	38	50	12	6	47	47	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
Ferintosh	33	50	17	55	18	27	25	-	75	-	33	33	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
New Norway	100	-	-	80	-	20	-	67	33	-	100	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
Meeting Creek	100	-	-	83	17	-	20	50	30	-	50	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
Doreenlee	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Donalda	100	-	-	100	-	-	33	67	-	33	33	33	9	9	82	-	17	83	-	-	-	-	-	-	-	-	-
Alix	-	-	-	100	-	-	67	-	33	-	-	100	33	-	67	-	-	100	-	-	-	-	-	-	-	-	-
Kelsey	-	-	-	-	-	-	-	100	-	-	-	50	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-

1. A = once per week or more; B = once to three times per month; C = once in two to six months.

from the survey area, though they attract customers at monthly or less frequent intervals from greater distances than does Ponoka.

Of the small centres Bashaw has the strongest attraction, but its drawing-power does not match that of any of these larger centres. Zone 5 (or twenty highway-miles) is the outer limit for weekly trips to Bashaw, Alix and Donalda. For weekly trips to the other small centres, Edberg and Mirror excluded, the limit is zone 3 (or ten highway miles), but in zones 1 of the small centres significant proportions of the linkages are in the "three or more times per week" category (a category in the original classification – see Appendix D), and clearly the "convenience factor" is of paramount importance to the trade of small centres. With the exception of Bashaw and Donalda linkages, and in contrast with the linkages of the large centres, comparatively few small centre linkages occur in the "one to three times per month" category. In general interviewees visit a small centre either very frequently – more than once a week – or very occasionally – twice a year or more rarely. Most of the competition facing the surveyed centres listed in the table comes from the five large centres nearest the area, and especially from Camrose. This can be clearly seen in Figure 6.

From an inspection of shopping trip data in their original form on the completed questionnaires it was seen that 95 per cent of the 117 interviewees visit one of the five large centres at least once per month. The 5 per cent (six interviewees) who do not are all located at over twenty-eight highway-miles (or the equivalent on inferior roads) from the nearest large centre.

Figure 6 (a)

PRESENT SHOPPING TRIP FREQUENCIES

TO LARGE CENTRES

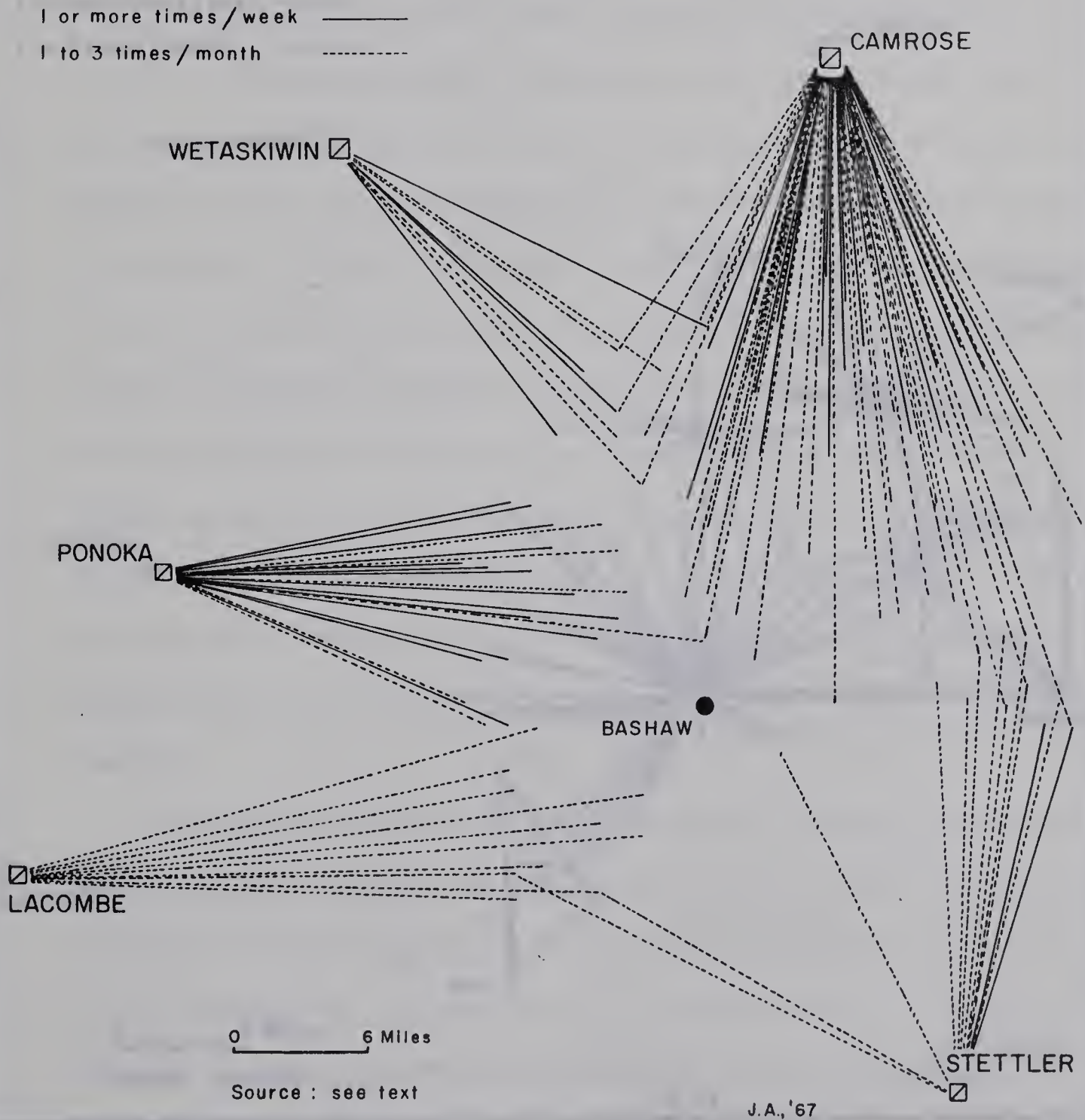


Figure 6 (b)

PRESENT SHOPPING TRIP FREQUENCIES

TO SMALL CENTRES

1 or more times/week ———

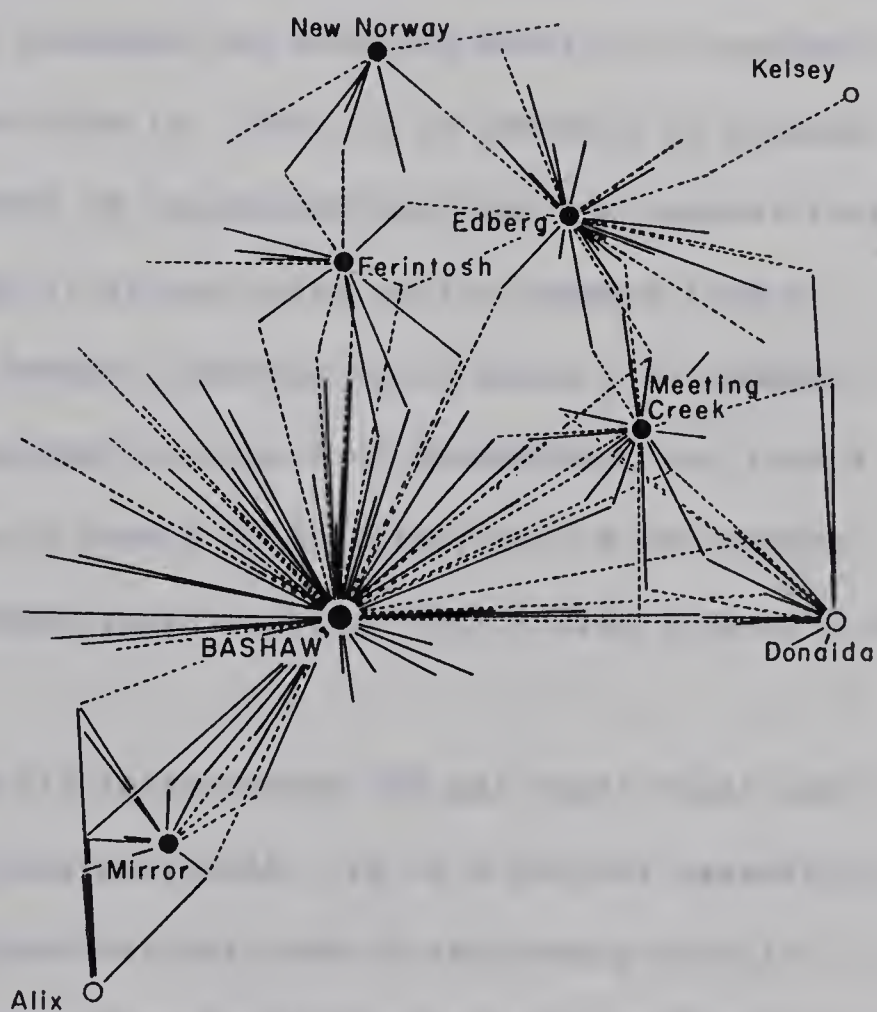
1 to 3 times/month - - - - -

☐ CAMROSE

WETASKIWIN ☐

PONOKA ☐

☐ LACOMBE



0 6 Miles

Source : see text

J. A., '67

STETTTLER ☐

All six are situated in the area around Bashaw or between Bashaw and Meeting Creek and Bashaw and Donalda. None reported visiting a large centre more than four times a year, and all visit Bashaw at least twice a week. Two are in zone 1 - Bashaw, two are in zone 4 - Bashaw and zones 3 and 5 of Bashaw contain the other two. Only two use another small centre, Donalda, which, though it is closer to them than Bashaw, they visit only once a month. These facts indicate two related points: the advantageous situation of Bashaw relative to the nearest large centres, (see Figures 4 and 6) and Bashaw's ability to dominate the shopping habits of households up to five zones distant from it. This is in contrast to Donalda which is also far in terms of accessibility from the nearest large centre, Stettler, though it is not quite so far removed from a large competitor as is Bashaw. (Bashaw is in zones 7 of Camrose, Ponoka, Stettler and Lacombe, in zone 8 of Wetaskiwin, and zone 9 of Red Deer; Donalda is in zone 6 of Stettler, zone 8 of Camrose and in Zones 9 of the other large centres. It is also in zone 6 of Bashaw.)

Twenty-four of the 117 interviewees (20 per cent) visit two large centres at least once per month. It is a further measure of Bashaw's counterattraction that only one of the twenty-four is located within ten highway-miles (or its equivalent) of Bashaw, in zone 3, and most of the remainder are situated beyond zone 5 of Bashaw.

To discover whether there are areal variations in the frequency of travel of interviewees which might detract from a comparison of

trade centres in terms of trip frequencies (e.g. of interviewees in the northern part of the survey area habitually visit trade centres more frequently than interviewees in the southern part) the total trips per month made by each interviewee were calculated. No such variations in travel frequency were discerned. However it was seen that those nearest to trade centres (throughout the survey area) tend to travel the most frequently. A table showing the percentages of linkages in each trade centre zone which correspond to three categories of percentage of total trips was prepared, but as it showed the same general patterns as Table VII it is not reproduced here.

All trips to Edmonton, Calgary and Red Deer constitute less than 20 per cent, and in most cases less than 10 per cent, of the total trips per month of the interviewees concerned. Of the large centres only Camrose and Ponoka are the destinations of over 50 per cent of the shopping trips of individual interviewees (all in zones 5 and 6). The majority of trips to large centres, and especially from zones 7, 8 and 9, comprise less than 20 per cent of total trips. In zones 1 and 2 of the small trade centres⁸ (and in zones 1 to 3 of Bashaw) a significant proportion of interviewees (upwards of 60 per cent) make over half of all their shopping trips to the respective small centre, and in zones 1 separately the proportions are even higher and the trips are more frequent.

8. With the exception of Alix and Doreenlee

E Present Expenditure in Trade Centres

Table VIII shows the percentage of linkages in each trade centre zone which correspond to three arbitrary categories of percentage of total annual expenditure allocated to the respective centres. The categories are: A, 60 per cent and over; B, 25 per cent to 59 per cent; C, 1 per cent to 24 per cent.

Edmonton, Calgary and Red Deer linkages are all in category C, and from the original narrower classification it was seen that nearly all these linkages are in the "less than 10 per cent" category. Camrose and Ponoka are the only large centres which receive over 60 per cent of the total expenditures of interviewees (virtually all are in zones 5 and 6). The linkages in zone 7 - Wetaskiwin in category B (25 per cent to 59 per cent) all pertain to interviewees who allocate between 40 per cent and 59 per cent of their expenditure to Wetaskiwin, and Lacombe and Stettler again appear the weakest of the large centres near the study area.

Bashaw and Donalda are the only small centres which receive over 60 per cent of an interviewee's total expenditure. Even in zones 1 and 2 of Ferintosh, New Norway and Mirror, and to a lesser extent, of Edberg and Meeting Creek, significant proportions of the linkages are in category C (less than 25 per cent). Over half the linkages in category B (25 per cent to 59 per cent) in zones 1 and 2 of these five small centres correspond to the original category 25 per cent to 39 per cent.

In contrast, all interviewees in zone 1 - Bashaw, and 88 per cent of those in zone 2 - Bashaw get over 60 per cent of their

TABLE VIII Percentage Expenditures and Accessibility

	Zone 1			Zone 2			Zone 3			Zone 4			Zone 5			Zone 6			Zone 7			Zone 8			Zone 9		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Edmonton	100	-	-	-	88	12	-	8	92	-	8	62	30	10	36	54	-	-	-	-	-	-	-	-	-	-	100
Calgary	-	100	-	-	33	67	-	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Red Deer	-	-	-	-	75	25	-	-	43	-	57	25	75	-	-	100	-	-	-	-	-	-	-	-	-	-	100
Camrose	-	40	60	-	25	75	-	-	-	-	100	-	67	-	-	100	-	-	-	-	-	-	-	-	-	-	100
Wetaskiwin	-	50	50	-	60	40	-	-	-	-	100	-	100	-	-	100	-	-	-	-	-	-	-	-	-	-	100
Ponoka	-	75	25	-	100	-	-	-	-	-	100	-	100	-	-	100	-	-	-	-	-	-	-	-	-	-	100
Lacombe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Stettler	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Bashaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Mirror	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Edberg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Ferintosh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
New Norway	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Meeting Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Doreenlee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Donalda	40	60	-	-	100	-	-	-	100	-	-	50	50	-	9	91	-	-	-	-	-	-	-	-	-	-	100
Alix	-	-	-	-	100	-	-	-	50	-	50	-	100	-	33	67	-	-	-	-	-	-	-	-	-	-	100
Kelsey	-	-	-	-	-	-	-	-	-	-	100	-	100	-	-	100	-	-	-	-	-	-	-	-	-	-	100

1. A = 60% and over; B = 25% - 59% and C = 1% - 24%.

purchases in Bashaw. Linkages in category B (25 per cent to 59 per cent) in zones 2, 3 and 4 - Bashaw are practically all in the 40 per cent to 59 per cent range. No interviewee within ten highway-miles (zone 3 boundary) of Bashaw gets less than 25 per cent of his total purchases in the centre, and in zone 4 - Bashaw only 30 per cent get less. In zone 6 - Bashaw, all linkages are in less than 10 per cent range.

While Bashaw clearly is not as strong in drawing-power as any of the five large centres, it is considerably stronger in the survey area than its chief local rivals, Donalda and Alix. Linkages in category B in zones 3 and 4 - Donalda are all in the 25 per cent to 39 per cent range; all linkages in zone 4 - Alix are in the less than 10 per cent range.

Of the 103 interviewees who answered the question on percentage allocation of expenditure, thirty-six allocate over 60 per cent of their expenditure to one of four trade centres.

TABLE IX

CENTRES RECEIVING LARGE PROPORTION OF INDIVIDUAL EXPENDITURES

Trade Centre	60% and Over	40% to 59%	Total: 40% and Over
Camrose	12	16	28
Wetaskiwin	--	4	4
Ponoka	6	3	9
Bashaw	16	19	35
Mirror	--	2	2
Edberg	--	5	5
Ferintosh	--	4	4
New Norway	--	1	1
Meeting Creek	--	1	1
Donalda	2	7	9
Alix	--	2	2
TOTALS	36	64	100

The number of interviewees allocating a high proportion of their expenditure to Bashaw is greater than the number for any one large centre, but the totals for the three large centres are greater than the corresponding figures for Bashaw. Bashaw's trade-area is less extensive than those of the large centres, but within a limited area around it Bashaw claims most of the expenditure of rural residents.

But the large centres as a group, and Camrose individually, get a greater share of the expenditure of interviewees than does Bashaw. There are forty-one linkages in which the three large centres get 40 per cent or more of interviewee expenditure. From the completed questionnaires it was seen that seven interviewees divide over 40 per cent of their total expenditure between two or more large centres. And eight interviewees divide over 40 per cent of their total expenditure between a large centre and Bashaw.

In terms both of trip frequencies and percentage expenditure the centres have the same order of importance to the rural interviewees. Edmonton, Red Deer, and, especially, Calgary, are relatively unimportant and of the large centres close to the area Camrose is strongest and Lacombe and Stettler are weakest. All the large centres get only weak support from zones 8 and 9 - all surveyed households are within seven zones of at least one large centre. Bashaw's strongest rivals are Alix and Donalda, and of the surveyed centres Ferintosh and Mirror appear weakest on both tables.

But the two sets of data differ in one important respect.

While the small centres are the most frequently visited, the greater proportion of total expenditure accrues to the less frequented large centres and to Bashaw.

F Present Trade in Specific Commodities

Twenty-eight tables were drawn to show the drawing power of the centres for twenty-eight classes of goods and services. The same general patterns emerged as those for trip frequency but there were some significant differences. The tables indicated the varying range of commodities and showed whether the rural customer gets all his requirement of a commodity in one centre (A) or gets only some of his requirement (S) in that centre. All twenty-eight tables are discussed but only twelve are reproduced here as the data on the other sixteen variables are very similar to data in one of the reproduced tables.

Interviewees market grain only in the small centres within or close to the survey area (Table X) . Grain, a bulky commodity, has a short range, grain elevators are the least centralized of businesses, and most interviewees travel less than ten highway-miles to market this commodity. Even the smallest centre, Dorenlee, has dominance in zone 1, yet the extent and intensity of even this service vary considerably for different centres. Bashaw's catchment area is the largest and Mirror's is very small. No interviewee markets grain in more than one trade centre.

Fertilizer supply is also decentralized though a few interviewees purchase fertilizer in Camrose and Ponoka and animal feed supply is only slightly more centralized, some farmers buying

TABLE X
Grain Marketing and Accessibility

	Zone 1 A ¹	S	Zone 2 A	S	Zone 3 A	S	Zone 4 A	S	Zone 5 A	S	Zone 6 A	S	Zone 7 A	S	Zone 8 A	S	Zone 9 A	S
Edmonton																		
Calgary																		
Red Deer																		
Camrose																		
Wetaskiwin																		
Ponoka																		
Lacombe																		
Stettler																		
Bashaw	100	-	67	-	62	-	56	-	41	-	-	-	-	-	-	-	-	-
Mirror	83	-	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Edberg	100	-	100	-	25	-	20	-	-	-	-	-	-	-	-	-	-	-
Ferintosh	67	-	36	-	50	-	67	-	-	-	-	-	-	-	-	-	-	-
New Norway	100	-	80	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-
Meeting Creek	83	-	67	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-
Dorenlee	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Donalda	75	-	75	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-
Alix			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kelsey					100	-	50	-	-	-	-	-	-	-	-	-	-	-

1. In this table and in Tables XI to XXI, A = All, and S = Some.

feed in a small and in a large centre. The small centres are the more important in the provision of both commodities. Only 27 interviewees purchase seed grain in a trade centre - mainly in Camrose and Bashaw - as most interviewees get their requirement from neighbouring farmers.

Livestock marketing and purchasing: Edmonton is the most important centre for livestock marketing (Table XI). Thirty-five interviewees do all their marketing in Edmonton and twenty-six do some there. Camrose and Stettler are next in importance and of the small centres only Bashaw, Donalda and Mirror (headquarters of the farmers' marketing co-operative) are significant in livestock marketing. It is predominantly a large centre service.

Livestock purchasing is confined to the large centres to an even greater extent, though few interviewees purchase in Edmonton, and none purchase in Calgary or Red Deer. The five large centres near the study area provide most of this service and Bashaw is the only small centre of importance for livestock purchases. Practically all the farmers interviewed trade in livestock in more than one centre.

Interviewees sell milk products to six creameries. They deliver to Bashaw and Alix, while all sales to Red Deer creamery are collected at the farm, and sales to Camrose, Ponoka and Donalda are both collected and delivered. Bashaw creamery is supplied almost entirely by farmers in zones 1 and 2 - Bashaw, and farmers in zones 1 to 4 - Donalda deliver to Donalda. In zones 5 to 7 there

is a collection service for Donalds creamery. The longest ranging collection service, that of Red Deer, extends over fifty highway-miles from Red Deer. Creameries are relatively highly centralized and only in the large centres and in Donalds are they important.

Farm machinery purchasing is also centralized, equipment being bought in all the large centres except Calgary, (Table XII). Of the small centres only Bashaw, Alix, Donalds and Edberg have a significant share of the trade. Nearly all interviewees buy machinery in more than one, often in more than two, trade centres. Generally the proportion in the "All" category (A) decreases with increasing distance from the centre. Machinery servicing is less centralized and has a shorter range, though Mirror and Ferintosh are conspicuously weak in this service (Table XIII).

Bulk oil and fuel delivery, like grain marketing and to a lesser extent machinery servicing, is a basic function of the small centre, though large centres do provide this service for a few interviewees (Table XIV). Bashaw and Edberg are most important and there is no service from Mirror or Dorenlee. Most interviewees are supplied from only one trade centre.

Automobile and truck purchasing is done mainly in the large centres, with Wetaskiwin dominant (Table XV). Bashaw, Donalds and Alix have significant sales in the survey area and Edberg and Meeting Creek have a few sales annually. Automotive servicing, like machinery servicing, is much less centralized (Table XVI). New Norway and Meeting Creek have a significant share of trade in this service, Mirror and Dorenlee do not.

Hardware (Table XVII) and construction materials are purchased in both large and small centres - mainly in Camrose and Ponoka and in Bashaw, Donalda, Edberg and New Norway.

For the services of a doctor interviewees go to the five large centres near the study area and to Bashaw (Table XVIII). Most have only one doctor, but many interviewees who use the recently established medical services of Bashaw generally visit one of the large centre clinics as well. The same five large centres provide all the veterenarian services required by interviewees and most of their legal service requirement is provided by lawyers in Camrose, Ponoka and Stettler, though the Mirror Lawyer has a small trade area and a few interviewees visit the Bashaw sub-office of a Camrose firm.

The five large centres and Bashaw, Alix and Donalda provide all the banking services needed by interviewees (Table XIX) and some interviewees deal both in a large centre and a small centre bank.

Insurance and administration services are also obtained in both classes of trade centre, primarily in Camrose, Wetaskiwin and Ponoka and in Bashaw, Donalda, Mirror and Edberg. Of the small centres Bashaw's service is greatest - for instance, all interviewees in zones 1 and 2 - Bashaw buy insurance in that centre.

Over one-third of the interviewees did not name a centre when asked where they went for entertainment, many mentioning that television was their only entertainment medium. But most of those who do visit a trade-centre for this commodity named a small centre, as well as a large one - Camrose and Ponoka were most frequently

TABLE XII

Farm Machinery Purchase and Accessibility

[illegible]

TABLE XIII
Farm Machinery Servicing Purchase and Accessibility

	Zone 1		Zone 2		Zone 3		Zone 4		Zone 5		Zone 6		Zone 7		Zone 8		Zone 9	
	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S
Edmonton																	-	-
Calgary																	-	-
Red Deer																	-	-
Camrose									50	50	50	50	-	62	-	36	-	-
Wetaskiwn									67	33	30	43	10	50	-	30	-	25
Ponoka														8	-	-	-	-
Lacombe														9	-	-	-	-
Stettler														39	-	40	-	-
Bashaw	50	50	33	67	46	46	22	45	4	50	-	16	-	-	-	-	-	-
Mirror	17	-	-	-	-	-	-	-	-	-								
Edberg	-	80	-	80	-	75	-	33	-	-								
Ferintosh	-	-	-	10	-	-	-	-	-	-								
New Norway	-	50	-	-	-	67	-	50	-	-								
Meeting Creek	-	50	17	67	-	60	-	-	-	-								
Doreenlee	-	-	-	-	-	-	-	-	-	-								
Donalda	25	50	-	100	-	67	-	67	-	8	-	17	-	-	-	-	-	-
Alix			-	100	-	67	-	50	-	33	-	100	-	-	-	-	-	-
Kelsey					-	-	-	-	-	-								

TABLE XIV
Bulk Fuel Delivery and Accessibility

	Zone 1		Zone 2		Zone 3		Zone 4		Zone 5		Zone 6		Zone 7		Zone 8		Zone 9	
	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S
Edmonton																		
Calgary																		
Red Deer																		
Camrose									50	-	11	-						
Wetaskiwin																		
Ponoka									67	-	-	7						
Lacombe																		
Stettler											10	-						
Bashaw	100	-	100	-	92	8	44	-	35	7	-	-						
Mirror	-	-	-	-	-	-	-	-	-	-	-	-						
Edberg	83	-	100	-	25	13	13	-	-	-	-	-						
Ferintosh	67	33	18	9	25	-	-	-	-	-	-	-						
New Norway	50	-	60	-	33	-	50	-	-	-	-	-						
Meeting Creek	83	-	67	-	50	-	-	-	-	-	-	-						
Doreenlee	-	-	-	-	-	-	-	-	-	-	-	-						
Donalda	75	-	75	-	-	-	-	-	8	-	-	-						
Alix			100	-	67	-	-	-	33	-	-	-						
Kelsey					-	-	-	-	-	-	-	-						

TABLE XVI

Automotive Servicing Purchase and Accessibility

	Zone 1		Zone 2		Zone 3		Zone 4		Zone 5		Zone 6		Zone 7		Zone 8		Zone 9	
	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S
Edmonton																	-	-
Calgary																	-	-
Red Deer																12	-	-
Camrose										50	16	41		25		10	-	-
Wetaskiwin														27		10	-	-
Ponoka									67	33	27	13		-		-	-	-
Lacombe											20	-		9		-	-	-
Stettler																	-	-
Bashaw	100	-	100	-	75	-	16	21	8	20	-	10		12		20	-	-
Mirror	17	-	-	-	-	-	-	-	-	-	-	-		-		-	-	-
Edberg	20	60	20	40	12	12	-	-	-	-	-	-		-		-	-	-
Ferintosh	-	40	10	20	-	-	-	-	-	-	-	-		-		-	-	-
New Norway	50	50	20	60	33	33	-	50	-	-	-	-		-		-	-	-
Meeting Creek	33	67	67	33	22	44	-	-	-	50								
Doreenlee	-	-	-	-	-	-	-	-	-	-								
Donalda	60	20	67	33	-	-	-	50	8	-	-	-		-		-	-	-
Alix			100	-	33	-	-	-	33	-	-	-		-		-	-	-
Kelsey					100	-	50	-	-	-	-	-		-		-	-	-

TABLE XIX
Bank Services and Accessibility

	Zone 1		Zone 2		Zone 3		Zone 4		Zone 5		Zone 6		Zone 7		Zone 8		Zone 9	
	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S
Edmonton																		
Calgary																		
Red Deer																		
Camrose							100		-	90	-		-	44	9	-		
Wetaskiwin														27		5		
Ponoka							67		-	19	13		-	-	-	-		
Lacombe										20	-		-	-	9	-	-	
Stettler											18		-	-	-	-	-	
Bashaw	100			78	11	69	15	47	11	17	7	-	-	-	-	-	-	
Mirror	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Edberg	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ferintosh	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
New Norway	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Meeting Creek	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Doreenlee	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Donalda	80	20	100	100	67	67	-	67	-	33	25	16	-	-	-	-	-	
Alix										33	-	-	-	-	-	-	-	
Kelsey											-	-	-	-	-	-	-	

mentioned, which perhaps indicates the social as opposed to the economic function of the small trade centre. In terms of the social life of the farm community the small local centre is probably much more important than the bare statistics suggest.

Post office services: no interviewee collects mail at a large centre and Ponoka is the only large centre from which mail is delivered to interviewees (in zones 5 and 6 - Ponoka). Mail is collected at all the small centres except Dorenlee, Alix and Kelsey and there is a delivery service from Bashaw, Edberg, Ferintosh, New Norway and Donalda.

Data on food purchasing reflect the difference between frequent purchase from local stores and less frequent bulk purchasing. Groceries are bought in all the small centres with the exception of Dorenlee. Bashaw dominates an area within ten highway-miles of the centre and has a significant number of customers in zone 4 and 5. (Table XX). Of the surveyed centres Mirror (where stores benefit from a relatively large trade centre population) is next in importance, and Meeting Creek ranks last. Edmonton and Calgary do not retail groceries in the survey area and only one interviewee buys food in Red Deer. Camrose, Ponoka, Wetaskiwin and Lacombe are the most important large centres for food supply.

The purchasing of "weekly groceries" is much more centralized. Of the small centres only Bashaw, Donalda and Mirror have a significant trade in "weekly groceries", and the greater part of this trade is concentrated in Camrose, Wetaskiwin and Ponoka. While very few interviewees get all their food requirement in one centre, many go to only one centre for "weekly groceries".

Appliances, furniture and clothing: data for trade in these commodities are very similar. The clothing trade (Table XXI) is highly centralized and Bashaw is the only small centre with a significant share in it. All three commodities have a long range and some interviewees travel to Edmonton, Calgary and Red Deer to obtain them. But Bashaw and the large centres near the study area, particularly Camrose, provide most of the requirements of interviewees, though none get all their requirements in Bashaw.

Summary: The twenty-eight classes of goods and services may be divided into four groups, according to which trade centres distribute them to interviewees:

1. Highly centralized: veterinary services, livestock, clothing, furniture, appliances and medical services are obtained only or mainly in the large centres and in Bashaw.
2. Moderately centralized: the large centres and several small centres dominate trade in the following goods and services: banking, automobiles, milk products, farm machinery, legal service, livestock marketing, and "weekly groceries".
3. Largely decentralized: machinery and automotive servicing, hardware, construction material, animal feed, seed grain, groceries, insurance, administration services and entertainment can be obtained in most of the small centres.
4. Decentralized: interviewees rely mainly or completely on the small centres for grain marketing, fertilizers, bulk fuel delivery, and postal services.

Thus the small centres monopolize trade in the survey area in

very few commodities, much fewer than are monopolized by the large centres and Bashaw. It is mainly in those commodities in group (3) that the smaller centres compete with the larger. The small centres retain functions largely because of the convenience factor - proximity to the rural household and the short range of some commodities (e.g. bulk fuel). The range of a particular commodity varies with the centre, at least partly because of the juxtaposition of other functions (contrast the range of Bashaw and Dorenlee for grain marketing - Table X); but the varying ranges of different commodities (and concomitant variations in degree of centralization) are generally obvious. Thus most small centres provide automotive and machinery servicing but they sell very few if any automobiles and machines.

The evidence from the Rural Household and Farm Survey, and from the Trade Centre Business Survey and the postal revenue index of economic activity correspond closely. Small centre businesses are generally small in scale, have small trade-areas and their main advantage is proximity to the rural customer. Rural residents in general visit a small centre more than once a week. The main competitors of the small centres are the five large centres near the study area, especially Camrose, Wetaskiwin and Ponoka, competition from Stettler and Lacombe being somewhat weaker. In general, rural residents in the study area visit a large centre once a week or less frequently, but the greater part of their expenditure goes to businesses in the large centres. As a consequence, many small centre businesses are economically marginal.

The influence of the large centres extends twenty-eight to thirty-eight highway-miles, that of Bashaw extends up to twenty highway-miles, but the other small surveyed centres have few customers over ten highway-miles from the centre.

The levels of economic activity of the small centres may be ranked as follows: Bashaw, Alix, Donalda, New Sarepta, Hay Lakes, Mirror, Edberg, New Norway, Ferintosh, Meeting Creek, Gwynee, Armena, Bittern Lake, Dorenlee. The first seven centres are in or beyond the secondary zone of a large centre while the remaining centres, with the exception of Meeting Creek and Dorenlee, are within a large centre's primary zone (see Figure 4). Meeting Creek suffers from the proximity of Bashaw, Donalda, and Edberg, while Dorenlee is close to both Bashaw and Ferintosh. Ranking by importance in rural service corresponds closely with the above ranking, with the exception that Mirror is more comparable to Meeting Creek than to Hay Lakes. It benefits from a relatively large population (as do Bittern Lake, New Norway and Gwynee) but its proximity to both Bashaw and Alix detracts from its rural trade.

With improvements in the transportation system since 1945 the large centres have become more accessible to the population of the study area, and this has led to complex readjustments in the rural service system. A better appreciation of the present system (and its possible future) is achieved from an assessment of recent changes in trade centres and patterns of rural trade.

PART III

RECENT CHANGES IN THE RURAL SERVICE SYSTEM

Recent changes in the system serving the study area were evaluated from the same source material as were its present characteristics. The Trade Centre Business Survey provided data on changes in the number of businesses and functions in the surveyed centres but, while a qualitative estimation of changes within existing businesses was obtained, survey data was inadequate for an assessment of the overall economic change in each centre. This was possible using postal revenue data, and growth and decline patterns of both small and large centres were revealed by this economic index.

The factors behind these changes are assessed in qualitative terms. The Rural Household and Farm Survey provided information on changes in the trading practices of rural residents; changes in rural and trade centre populations are described; and other changes in the conditions of trade centre competition are discussed.

Chapter 8

Changes in Surveyed Trade Centres

Trade centre changes¹ include a change in the number of businesses in the centre and changes within existing businesses. Both may or may not involve a change in number of functions. A centre may suffer a loss of functions to the extent that it ceases to be a trade centre and there are fewer trade centres in the study area than formerly.

Small centres had begun to decline by 1930. Malmo and Tristram, situated between Highways 2A and 21 and without rail connection, never had grain elevators and their post offices had closed by 1933. Even in the 1920's they were very insignificant centres (their gross postal revenues in 1923-24 were, respectively, \$56 and \$22). At that time there was an hotel in Bittern Lake, Dorenlee once boasted an hotel, and until the 1930's there was a resident doctor in Donalda, and in New Norway there was a bank and a creamery. However this study concentrates on post-1945 changes, even though the trends may have originated in the pre-war era. Changes which occurred before 1945 are mentioned but analysis of the factors then operative is not attempted.²

Viewpoint and Lamerton ceased to be trade centres in 1962 and 1964, respectively, when they lost their last function - grain marketing; the elevator in Ervick has also been closed down. Viewpoint post office had closed by 1943, and the general store in

1. Some trade centre changes are also discussed in Chapter 3, above.

2. See Chapter 2, Section A.

Lamerton closed in the early 1950's.

In 1960 and 1964, Duhamel and Dorenlee suffered serious loss of function when their general stores and post offices burned down and were not rebuilt; and Duhamel grain elevators would have been shut down but for the objections of the local farmers. Bittern Lake general store closed in 1962, because of increased competition from large Camrose stores and also partly because of over-extension of credit (75 per cent of sales). The machinery repair shop has lost its machinery agency and two mechanics, and its trade-area has contracted in the face of competition from Camrose and Wetaskiwin. The population of Bittern Lake increased threefold between 1951 and 1961 (see Table XXIV) and a community hall and a curling rink have recently been built. Only three persons work in the centre and commuting to jobs in Camrose has greatly increased. This coincidence of population increase and commercial decline illustrates the unreliability of population as an indicator of the economic importance of small centres. Since 1945, Armena general store has lost trade to Camrose, and also to Hay Lakes stores, but its turnover of bulk fuel has decreased only slightly. Its trade-area has remained unchanged. The trade-areas of both food stores in Gwynee have contracted: former customers living furthest from Gwynee now get all their groceries in either Camrose or Wetaskiwin, and a decreased proportion of the remaining customers get their "weekly groceries" in Gwynee. However one of the food stores was established as recently as 1956 so the number of businesses has actually increased, and a new school was built in the mid-1950's. Gwynee garage

has lost its automobile agency, but its turnover has recently increased under new management. All three interviewees considered that highway improvements have caused a loss of trade in Gwynee.

Meeting Creek has lost at least ten businesses since 1945, and all six interviewees said that decline has been particularly pronounced in the last five years. It has lost the functions of a hardware store, a lumber yard, a blacksmith's shop, an egg-grading station, a barber shop, a dance-hall and a pool hall. In 1964 a general store closed and the centre has also lost one automobile- and two farm machinery-agencies and two cafes. The turnover of the remaining general store increased when its rival closed and both garage owners said they have recently increased their stocks and expanded their trade-areas. One of the two garages opened in 1958, but while a few businesses have increased their turnovers the rural service of Meeting Creek has declined. Some farmers in the area consider that Meeting Creek continues to get the farmers' patronage only because of the good automotive and machinery servicing available there. Bashaw and Camrose competition has increased and some trade has also been lost to Edberg and Donalda.

There are nine businesses in Ferintosh where twenty years ago there were at least fifteen. Two hardware and lumber stores, a general store and a dry goods shop, a bank, a garage, a blacksmith's shop, a cafe, and a barber shop and pool hall have ceased to function. Only the recently established (1959) mobile feed-mill has escaped loss of trade to Camrose, Wetaskiwin and Bashaw. A service station has lost two licensed mechanics and a machinery agency, and the

bulk fuel trade has declined because of increased competition (and alleged price-cutting) by Bashaw distributors. Both food stores sell less "weekly groceries" and though they carry a larger stock of goods and their trade-areas expanded to the south when Dorenlee general store burned down, their turnovers have decreased. The The composit trade-area of Ferintosh has contracted and as well as losing trade to large centres and to Bashaw, there has been some loss to Edberg and New Norway. Six interviewees blamed road improvements for the centre's decline.

Highway improvements were also blamed for a decline in trade in New Norway; only the hotel and service stations near Highway 21 appear to have benefited from its construction. New Norway's trade-area has contracted slightly in the north and west, because of increased competition from Camrose and Wetaskiwin. Only fuel suppliers and the hotel keeper claimed to have been unaffected by competition from large centres; on the other hand several interviewees said that Ferintosh competition has decreased, and in the automotive trade Edberg is now less competitive. Only the hotel has expanded its trade-area and the manager said that people are now willing to travel farther for a "social evening". It was built beside the Highway in 1960; its predecessor was in the commercial centre of New Norway, about a quarter-mile east of the highway. One of the two general stores destroyed by fire in 1965 is continuing to operate in a new structure much nearer the highway, a service station migrated to the main road in 1955 and a new service station was established nearby in 1956. This migration to the highway indicates

that New Norway has increased its highway-trade. In contrast, Ferintosh businesses are further from the highway and do not appear to have a highway-trade; and Ferintosh has declined more than New Norway.

Since 1945, at least four stores, a cafe and a blacksmith's shop have closed in New Norway. In addition the lumber yard has reduced its stock of hardware lines and can no longer supply farmers with all their requirements, and the garages have lost their agencies for automobile and farm machinery.

In recent years Edberg has lost the functions of a creamery, egg-grading station, and bank. A garage, a hardware store, a cafe and a shoe repair shop have also closed and the existing garage has been deprived of its machinery agency. The Northern Alberta Dairy Pool creamery closed in 1959 when its business was transferred to the Camrose creamery, and the bank was transferred to Donalda. The only recent additions have been another fuel depot (1962) and the feed mill (operated by the garage owner since 1958). Only the general store and the hardware shop have increased their turnovers; this was achieved by increasing their stocks and the hardware dealer added that Edberg has benefited from the decline of Meeting Creek, Kelsey, Ferintosh and New Norway. Donalda's trade in the Edberg area has also decreased and the trade-area of Edberg's machinery agency expanded when a rival agency was withdrawn from Donalda.

But Edberg has suffered a net loss in trade to Camrose, and, in the last five years, to Bashaw. Four interviewees consider that road improvements have contributed to its decline, but several

mentioned that its losses have been less than those of some centres nearer the highway, Ferintosh, Bittern Lake, and Mirror being specified.

The commercial decline of Mirror is partly due to its losing railway repair functions in 1958, and while some Mirror businessmen are attempting to increase their rural trade,³ the total rural service of Mirror has decreased. The trade-areas of its three food stores and hardware shop have expanded, and the trade and trade-area of the lawyer's office have increased because there are no longer resident attorneys in Bashaw and Alix. But the bank closed down in 1950 and since then a hardware store, a butcher's shop and a pool hall have been shut down. In 1957 a pharmacy was reduced to a sundries store and one of the centre's service stations was formerly a garage. The food stores gained from the closure of Lamerton general store but have in turn lost trade to stores in Lacombe, Bashaw, Alix and Stettler; and the farmers' marketing co-operative (which accounts for nearly half the present turnover of Mirror — see Table III, footnote 2) has lost trade to large centres and to Bashaw, reputedly because livestock can now more conveniently be hauled direct to these more distant centres. The only new business is the service station established in 1964 beside Highway 21 and much of its trade is with highway travellers.

Hay Lakes has not declined as sharply as Mirror but it has lost at least eight businesses since 1945. In the last ten years a blacksmith's shop, a butcher's shop, a grocery, a cafe, a service station and a barber shop and pool hall have closed and the centre's automobile and machinery agencies have been withdrawn. Both general

3. See Chapter 3, Section A, above.

stores have a decreased dry goods trade and have lost trade to Camrose and Edmonton, despite having increased their stocks of goods. In the past, one stocked drugs and where it now employs two clerks, it employed as many as eight before the war. The lumber yard recently stopped selling hardware, but now makes prefabricated houses. The only recent additions to the centre have been a bulk fuel depot in 1948, and a Calgary Power office in 1951. Only one interviewee reported a recent increase in turnover, and five mentioned increased competition from Camrose, and also from New Sarepta. Four blamed highway improvement for the decline, and being "too close to Camrose" was seen as the major cause. It was pointed out that New Sarepta which is further from Camrose has gained three businesses since 1960. Hay Lakes is approximately eighteen highway-miles from Camrose and New Sarepta is about ten miles further north on Highway 21, approximately equidistant from Camrose and Edmonton. Like Bashaw it is relatively far from large centres, and, apart from Bashaw, it is the only small centre studied in which there has been a recent net increase of business. The addition of an insurance agency and a lumber yard brought an increase in the number of functions of New Sarepta and it now has more functions than Hay Lakes.

Since 1950 at least eighteen new businesses have opened in Bashaw, eleven of them since 1960. It was the consensus that growth started in the 1950's and greatly accelerated in the last five years. Many functions which are not performed by other small centres are recent acquisitions. Bashaw's two finance companies

opened in the mid-1950's, a government liquor store opened in 1959, a Macleod's department store was established in 1960. In 1962 the centre gained two clothing shops and an auction mart, and in 1963 it gained a hospital and two resident doctors, a radio and T.V. shop, a seed cleaning plant, a jeweller's shop, an accountancy business, and a coin laundry; and both tire shops, which provide specialized automotive servicing, have been established since 1960. The number of businesses performing established functions has also increased; for example, the number of fuel depots increased by two in 1959-60, a large co-operative grocery store opened in 1963, the number of machinery agencies has increased and more licensed mechanics are employed in the centre. Over forty new residences, including an apartment block, have been built since 1960. An Old People's Home was to be opened in 1966 and it was rumoured that the creamery may be converted to a cheese making factory. Only a carpenter and the owner of a trucking company have recently gone out of business, the latter for health reasons. A veterenarian opened a business for one year and a garage lost an automobile agency but now has a sub-agency for a Camrose garage.

Long-established businesses have gained from the increase of functions in Bashaw; for instance, the turnover of the pharmacy has practically doubled since the hospital opened. Twenty-three businesses have significantly increased turnovers and twenty interviewees reported an expansion in their trade-areas. The median trade-area of Bashaw businesses is larger than formerly. Only two businesses have lost trade, the pool hall and the creamery, and the

latter's trade-area has contracted. The creamery operator said business has been lost to the co-operative creamery in Donalda; it operates a system of bonus payments and collects cream at the farm, whereas farmers have to deliver their cream to Bashaw.

Interviewees said that Bashaw has gained from the decline of other small centres, Meeting Creek, Ferintosh, Mirror and Donalda being specified. Seven mentioned Bashaw's "central position" relative to large centres as the factor which has made growth possible, and twenty-two considered that highway improvements had benefited the centre, eight adding that if the road to Donalda were improved Bashaw would benefit considerably "Community spirit" has been a factor and several persons in the town were given credit by their fellow townsmen for Bashaw's growth. In a small community one individual may have a considerable influence on the community's fortunes (as well as on his own!). Having its own newspaper may also have helped in Bashaw's drive to improve its economic status, and a number of interviewees considered that the decision to build a hospital in Bashaw provided the main impetus for recent expansion.

Opinion on whether competition from large centres was increasing was divided: operators of food and clothing stores and the finance companies said it was increasing, especially from Camrose and Ponoka, while hardware dealers said it was decreasing. Camrose, Ponoka, Lacombe and Stettler were identified as Bashaw's main competitors but some businesses, for example fuel depots, appear immune from their competition. Competition from all small rivals, including Donalda and Alix, was said to have decreased. Indeed

only the latter two centres merit that title. But Donaldda has declined sharply in recent years and if the decline of Alix has not been spectacular that centre has lost five businesses while Bashaw has been expanding.

The number of businesses and of functions in most of the small centres has decreased, and in many cases the volume of trade of the remaining businesses has dwindled. The total commerce of each of the small trade centres, with the exception of Bashaw, has been considerably reduced in the last twenty years.

Total employment in extant businesses in seven of the ten surveyed centres is less than previously; in Bashaw employment in nine businesses has increased in the last five years and new jobs have been created in new establishments; only in Gwynee and Armena has the number of workers remained unchanged. Of the sixty-eight businesses surveyed in centres other than Bashaw, less than ten do more trade than formerly, and several of these have increased turnovers simply because competition within the trade centre has declined or ceased to exist. Only eleven of the sixty-eight interviewees said they had enlarged their stock of goods, in response to increased competition from other centres, and the turnover of several has decreased despite the enlargement of stocks.

Several establishments have taken on new functions but loss of function has been much more common. General stores have lost most of their dry goods trade to stores in Bashaw and the large centres, and their sale of bulk or "weekly" groceries has declined; agencies for machinery and automobiles have been withdrawn from

many small centre businesses; few small centres now have banking facilities; and the most decentralized of business establishments - grain elevators, post offices and general stores - are now concentrated in fewer centres.

Eighteen interviewees reported that their trade-areas have recently contracted and forty-five, including twenty in Bashaw, reported an expansion of trade-area. The "median" or composite trade-areas of the small centres, Bashaw excluded, probably have not changed greatly. Those of Bittern Lake, Ferintosh, Gwynee and Meeting Creek may be slightly smaller, and those of Hay Lakes and Edberg slightly larger, but turnover changes generally have not been due to trade-area changes (trade-area extent is not necessarily closely related to volume of business). Only Bashaw's trade-area has expanded significantly, despite improvements in the transportation system.

Increases in external competition have led to complex readjustments among the smaller centres; they have had varying effect on these centres. Thus Meeting Creek has lost trade to Edberg and Donalda, Ferintosh has lost to Edberg and New Norway, New Norway gained from the depletion of functions in Duhamel, and Edberg has gained some trade from New Norway (though the movement has been two-way) and also from Kelsey. Even in fuel delivery, a "low-order" service, Meeting Creek has lost to Bashaw, Edberg and Donalda, and Bashaw has taken some business from Ferintosh. And it was Bashaw rather than Ferintosh which gained most from the destruction of the general store and post office in Dorenlee. But the only

small centre with a net gain from these readjustments is Bashaw. In general, the larger of the small centres have withstood the competition of large centres most successfully, though location relative to the large centres is a very important factor.

Another source of information on trade centre change are the Dun and Bradstreet Reference Books. The number of businesses listed for each small trade centre in the Reference Books for September, 1940, January 1950 and March 1965⁴ is shown in Table XXII. Serious doubt has been cast on the reliability of this source,⁵ doubt substantiated by the present study. Professional businesses such as those of doctors, lawyers, and veterinarians, and insurance agencies, auction marts and barber shops are some of the businesses generally excluded from the Reference Books. Hotels are listed only if they incorporate a cafe and branches of nation-wide firms are listed only if the branch-manager has purchasing authority. Furthermore some businesses (e.g. blacksmith shops and laundries) are generally listed only if they have two or more employees, and some retail shops are not listed unless they have a sufficient turnover to warrant credit appraisal.⁶ This leaves considerable latitude for omissions (compare the numbers listed in March, 1965 with the numbers covered in the Trade Centre Business Survey - Table II).

4. Access to this source was courtesy of Mr. D.K. Knight, District Manager, Dun and Bradstreet of Canada, Ltd., Edmonton.

5. G.T. Trewartha, "The Unincorporated Hamlet: an Analysis of Data Sources," Rural Sociology, Vol. 6, 1941, pp.35 - 42.

6. Pers. comm., Mr. D.K. Knight, December 15, 1966.

Yet as the Reference Books are revised every few months it can be assumed that all businesses listed at a particular date were in fact operating, and the listings are useful in that they show the minimum number in operation at specific past dates.

TABLE XXII

THE NUMBER OF BUSINESSES LISTED IN

DUN AND BRADSTREET REFERENCE BOOKS,

1940, 1950 and 1965

Trade Centre	1940 (September)	1950 (January)	1965 (March)
Bashaw	36	33	38 (43) ¹
Alix	23	29	30
Donalda	21	20	19
New Sarepta ²	13	13	7
Hay Lakes	19	16	10 (15)
Mirror	20	19	11 (12)
Edberg ³	--	--	11 (10)
New Norway	15	15	10 (11)
Ferintosh	16	17	9 (9)
Meeting Creek	10	8	6 (6)
Gwynee	5	2	2 (3)
Armena	2	3	1 (1)
Bittern Lake	2	4	1 (1)
Duhamel	3	1	--
Dorenlee	1	1	--
Viewpoint	1	--	--
Lamerton	1	1	--
Malmo	1	1	--
Tristram	--	--	--

1. Number of surveyed businesses, July, 1965, is shown in brackets.

2. New Sarepta contained at least fifteen businesses in 1965, according to its Secretary-Treasurer.

3. Edberg businesses are not listed in 1940 or 1950, but nine Edberg firms are listed in the September 1945 Reference Book.

The smallest centres have declined most since 1940. Three centres have become defunct and Duhamel has lost two general stores and a blacksmith's shop, Gwynee has lost a blacksmith and a shoe repair shop, Bittern Lake has lost a lumber yard, a feed mill and a general store, and in Armena a service station and a bulk fuel depot have closed. All the surveyed centres, Bashaw excluded, now have fewer businesses than in 1940. Losses have generally been greatest since 1950, and have been particularly pronounced in Mirror, Ferintosh and Meeting Creek. In contrast, the number of businesses listed for each of the five large centres near the study area in 1965 (March) is nearly double the number listed in 1945 (September). However a more comprehensive (and more reliable) assessment of the various changes in the rural service system was obtained by plotting postal revenue data through time.

Chapter 9

Economic Changes as Indicated by the Postal Revenue Index

The validity of gross postal revenue as an index of the present commercial importance of trade centres has been argued in Chapter 5. But the lack of precise data on the past economies of the surveyed centres precludes the testing of this index for the past. However, Howell Jones¹ found that the correlation values for postal revenue with retail trade in 1931 and in 1961 are practically identical for centres in British Columbia of over 5,000 inhabitants (for which adequate data are available). He concluded that the index was valid for both past and present. As the post office performs basically the same functions now as in the past there is no reason to suppose otherwise. Using this index it was possible to compare the relative importance of all the centres at specific past dates and the changes which occurred during given time periods.

The number of post offices in the study area has decreased as postal service has itself become more centralized.² Only data relating to post offices still operating is presented here. But only in a few cases has centralization of postal service involved closure of a post office in the study area and those centres which lost a post office were all very small, and they also lost other func-

1. G.I. Howell Jones, Postal Revenue as an Index of Centrality, A paper presented at the Annual Meeting, Canadian Association of Geographers, Vancouver, May 29, 1965, pp.3, 4 and 5.

2. M.C. Urquhart and K.A.H. Buckley (eds.), Historical Statistics of Canada, Toronto, 1965, p. 555, Series S 294-306: since 1940 (the peak-year) the total number of post offices in the province of Alberta (and also in Saskatchewan) has decreased; centralization has not been confined to the study area.

TABLE XXIII

Gross Annual Postal Revenues in Seventeen Centres,
1923-24 to 1963-64

POST OFFICE	1923-24	1933-34	1943-44	1953-54	1963-64
Camrose	14,789	15,622	32,698	50,606	90,978
Wetaskiwin	12,987	15,613	29,114	39,403	64,352
Ponoka	7,054	9,699	17,979	30,215	48,279
Stettler	10,250	9,479	15,901	33,818	49,488
Lacombe	11,623	11,330	20,207	31,106	44,006
Bashaw	3,276	3,640	5,086	5,926	8,937
Alix	3,167	4,523	4,939	4,698	6,935
Donalda	2,352	2,435	3,816	3,384	3,562
Mirror	2,293	2,741	3,442	3,159	2,565
Hay Lakes	905	1,373	2,290	2,601	2,423
New Norway	1,651	2,069	2,192	1,977	2,386
Edberg	1,111	1,706	2,092	2,147	1,819
Meeting Creek	848	1,119	1,548	1,708	1,371
Ferintosh	1,605	1,443	1,952	2,013	1,305
Gwynee	867	598	963	692	697
Armena	88	339	612	530	615
Bittern Lake	696	903	1,020	478	345

tions.³ Annual gross revenues of post offices in the ten surveyed centres, Alix, Donalds, and the five large centres nearest the surveyed centres are presented in Table XXIII. To compare the dollar values in any two fiscal years they must be converted to "constant dollars."⁴ No price index exists for all postal rates in Canada, however, and as postal charges may not have changed at the same rate as other prices, the other price indexes which are available cannot safely be used. It was decided therefore to express the revenue of each post office as a percentage of the total revenue of all seventeen post offices, in each of the five selected fiscal years. These percentages were graphed (Figures 7 and 8) to show the relative status of each centre in each fiscal year, and the relative changes which occurred in each decade. Despite the absence of suitable "constant dollar" conversion factors, some absolute decreases can be indicated, though, because the degree of inflation is not known, the amount of change cannot be stated exactly. Where the revenue of a post office, expressed in "current dollars", decreased over a ten year period it can be concluded that its real volume of business decreased, because, at least since 1943-44, postal charges have not been lowered.

The percentage revenues of each of the seventeen trade centre post offices and the percentage revenues of the five large centres combined and of the twelve small centres combined are shown in

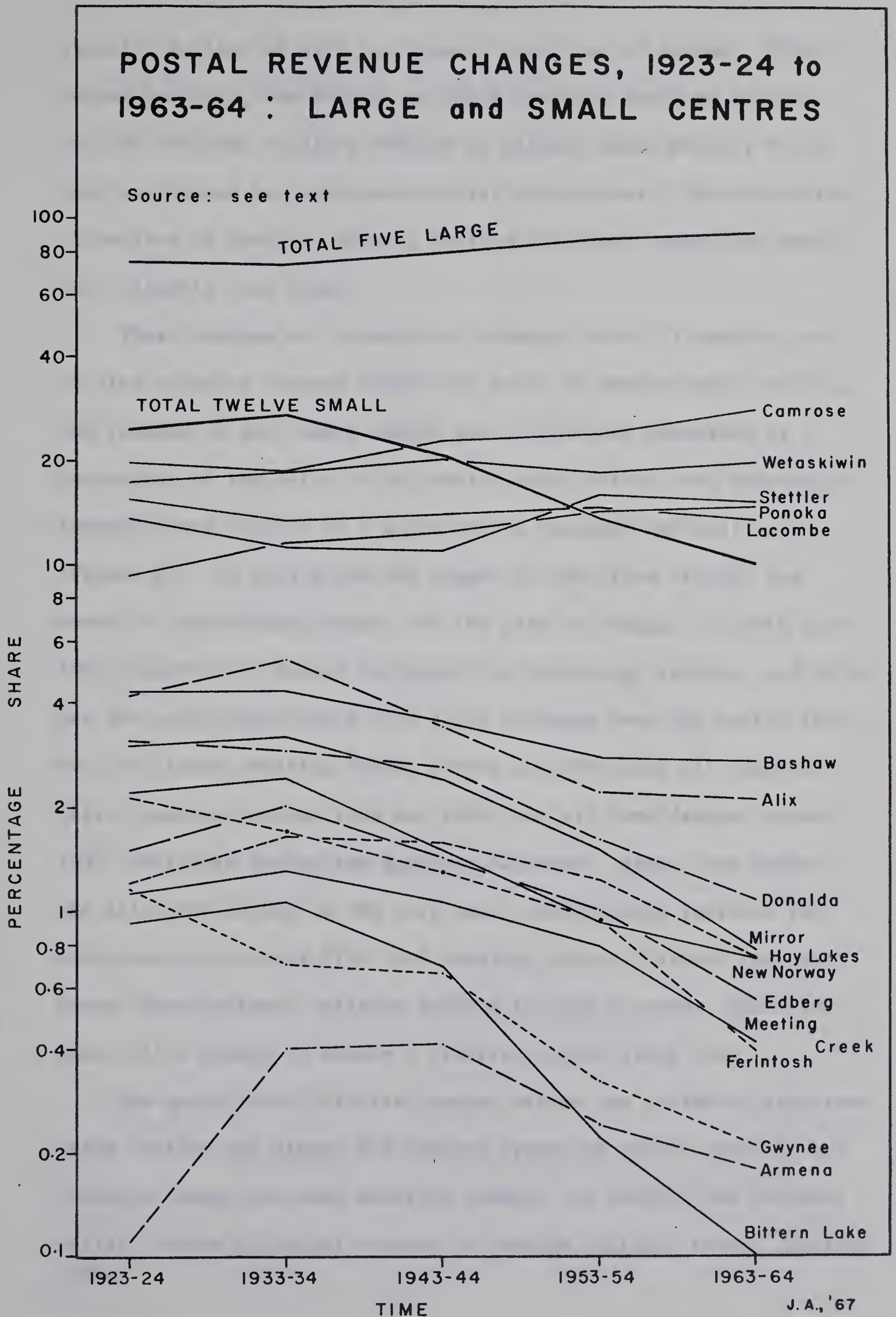
3. Since 1924, Tristram, Malmo, Viewpoint, Lamerton, Duhamel, and Dorenlee have lost their post offices.

4. Pers. comm., Director, Public Finance and Transportation Division, Dominion Bureau of Statistics, December 19, 1966.

Figure 7. As semi-log-arithmetic paper was used, the slopes of the lines indicate the proportional change which occurred in each decade. The vertical scale is not constant so the slopes do not reflect absolute percentage change: at the top of the graph the slopes are "flattened out." The amount of percentage change can be gauged by referring to the vertical scale, and the difference between the dollar values in any two fiscal years for the large centre as compared to the small centre post offices can be seen in Table XXIII. Percentage postal revenues range from 0.1 per cent (Bittern Lake, 1963-64) to 27.6 per cent (Camrose, 1963-64).

The rate of change has been greatest in the small centres. Their decline started in the 1930's (as Trade Centre Business Survey evidence suggested), and, though they actually improved their standing relative to the five large centres in the 1920s, singly none of them compared with even the smallest large centre (Ponoka and Alix were, respectively, lowest and highest in their respective classes). The percentage accruing to large centres rose from 73 per cent in 1934 to 90 per cent in 1964 and the combined percentage revenues of the small centres declined despite the fact that the number of small centre post offices also decreased. By 1963-64 their combined total revenue was less than the revenue of each of the large centres. Of the latter, Camrose revenue has increased most in recent years, and in the last decade the relative status of Stettler and of Lacombe has dropped. Since 1944 the relative standing of all the small centres has declined; in the period 1954-64 only Bashaw and Alix have not dropped significantly, and in the previous decade the

Figure 7



relative decline of Alix was greater than that of Bashaw. After Bashaw and Alix, New Norway and Hay Lakes have declined slowest, and the post-war relative decline of Bittern Lake, Mirror, Ferintosh and Gwynee has been particularly precipitous. The proportional decline of Donalda, Edberg, Meeting Creek and Armena has been only slightly less steep.

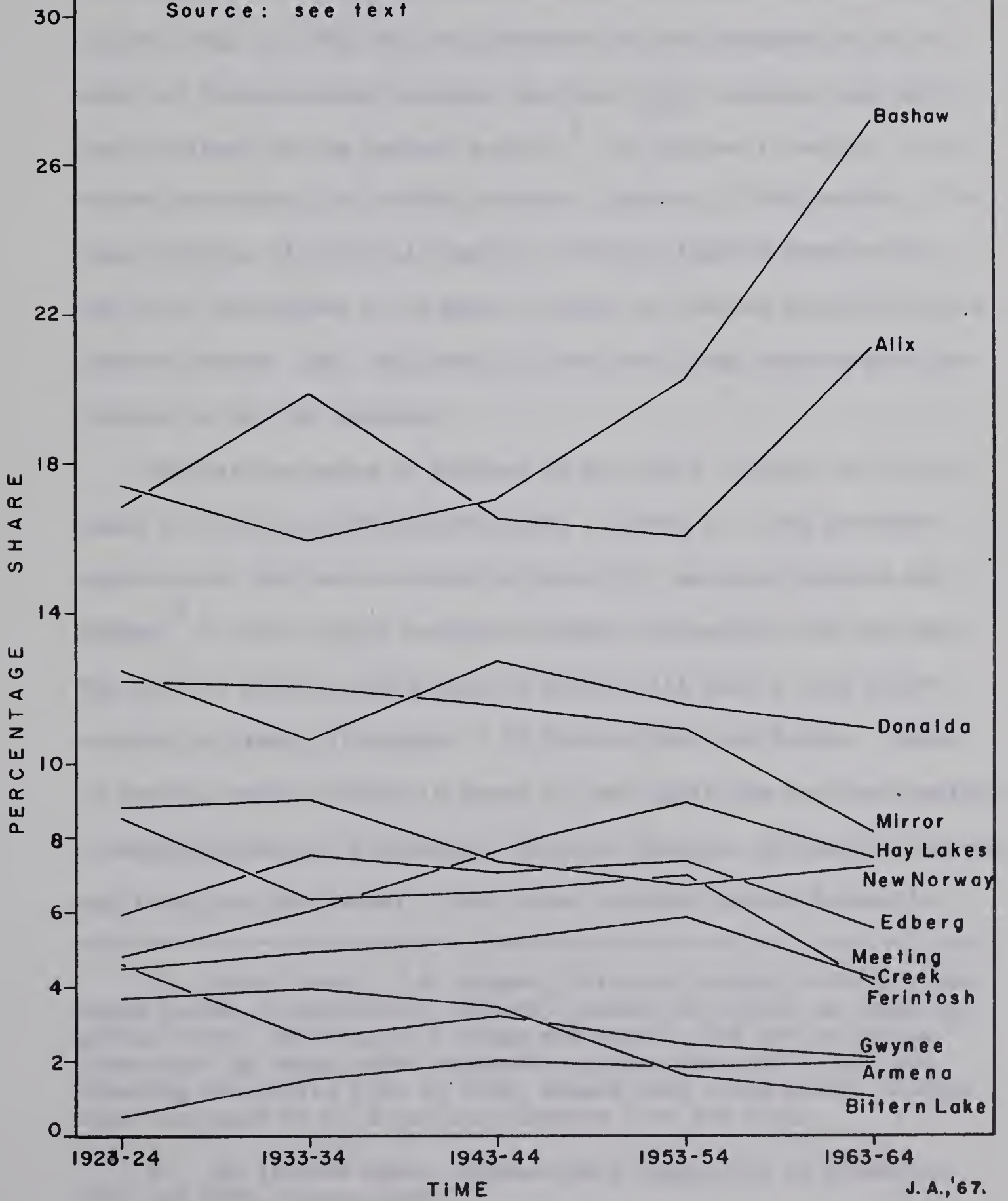
These changes are relative to changes in all 17 centres, so to find relative changes within the group of twelve small centres, the revenue of each small centre post office was expressed as a percentage of the total of all twelve post offices, and percentage revenues were plotted on a graph with a constant vertical scale (Figure 8). In this graph the slopes of the lines reflect the amount of percentage change, not the rate of change. In both post-1944 decades only Bashaw increased its percentage revenue, and Alix was the only other centre with a net increase over the period 1944-64. Hay Lakes, Meeting Creek, Edberg and Ferintosh all improved their standing between 1944 and 1954, but all have dropped since 1954, Ferintosh having the greatest decrease. Apart from Bashaw and Alix, New Norway is the only small centre which improved its relative status since 1954, and Donalda, Mirror, Bittern Lake and Gwynee have suffered relative decline in both decades. There has been little change in Armena's relative status since 1944.

The graphs show relative changes within the system of seventeen trade centres and within the smaller system of twelve centres, but relative change can mask absolute change. In 1963-64 the "current dollar" values of postal revenue in Donalda, Mirror, Edberg, Meeting

Figure 8

POSTAL REVENUE CHANGES, 1923-24 to 1963-64 : THE SMALL CENTRES

Source: see text



Creek, Ferintosh, Gwynee and Bittern Lake were lower than the "current" values in 1943-44. The economic activity in these centres has declined absolutely (for while the increase in all postal rates since 1943-44 is not known, it is known that they were not reduced). The figures for Alix, Hay Lakes, New Norway and Armena were higher in 1964 than in 1944, but the revenues of each dropped in one or other of the post-1944 decades, and their real revenues may well have declined in the overall period.⁵ Of the small centres, only Bashaw increased its current revenue figures in both decades. The total revenue of the small centres dropped slightly between 1944 and 1954, but showed a net gain in terms of current dollars for the 1944-64 period. But the total for the five large centres more than doubled in the two decades.

The varying rates of decline of the small centres can be related to the four subdivisions shown in Table II. The greatest proportional decrease occurred in Group (1) centres, Dorenlee and Duhamel⁶ — their postal revenues dropped the maximum 100 per cent. The fastest decline among centres which still have a post office occurred in Group (2) centres — in Bittern Lake and Gwynee. Rates of decline varied widely in Group (3) but again the smallest centres — Meeting Creek and Ferintosh — declined fastest, followed by Edberg, Hay Lakes and New Norway. The latter probably gained Duhamel's

5. Pers. comm., A.D. Holmes, Director, Prices Division, Dominion Bureau of Statistics, Canada, January 10, 1967: an index of postal rates, relating to postage and parcel post and excluding items such as money order commissions, with base 1949 = 100 and covering the period 1949 to 1966, showed that these postal charges were increased by 22.6 per cent between 1954 and 1964.

6. In 1943-44 their revenues were comparable to Armena's, \$471 and \$735, respectively.

former customers. The largest of the small centres declined least: in the decade 1954-1964 Bashaw's relative standing remained virtually unchanged, and Alix declined only slightly. Armena and Mirror are the exception to this loose relationship between trade centre status and rate of decline: since 1945 Mirror's percentage share of postal revenue has dropped sharply, Armena's much less sharply. Among the large centres, proportional change between 1954 and 1964 has been greatest in the biggest centre - Camrose.

Since 1944 there has been relatively little change in the ranking of each centre in order of postal revenue values. Among the large centres, Ponoka has surpassed Lacombe, and Stettler has moved ahead of both. Among the small centres, Meeting Creek has moved ahead of Ferintosh and Bittern Lake has dropped behind Gwynee and Armena. In 1954 New Norway was behind Edberg and Ferintosh but has since regained its 1944 ranking. This relative lack of vertical mobility in recent years may indicate that the rural service system has "matured" (changes of rank in the pre-1944 period were much greater and more numerous) and is much less liable to sporadic fluctuations than formerly. Constancy of rank within any group means that the relatively large centres remain relatively large, and the small remain relatively small. However the main conclusion to be drawn from changes in postal revenues is that since the 1930's the gap between the small and the large centres has become progressively wider though the rate of centralization to the large trade centres was greatest in the immediate post-war decade.

Chapter 10

Population Changes

Population changes, and in particular rural depopulation, are often cited as factors in the decline of small trade centres.¹ Depopulation in a centre's trade-area brings a decrease in support for businesses in the centre and may be sufficient to deprive individual businesses of a threshold population. But the threshold population necessary to support a given business may change through time (e.g., because of changes in business methods and levels of competition), and the extent of a trade-area is also liable to change: thus the importance of population changes as factors in the growth or decline of trade centres cannot be accurately measured. Their significance can, however, be discussed in qualitative terms.

A. Trade Centre Populations

There was little relationship between changes in the populations of small centres in the period 1951-1961 (Table XXIV) and recent changes in their percentage share of postal revenue (Figures 7 and 8). Both the population and percentage revenue of Meeting Creek and Ferintosh declined, while in Alix both increased. But the revenues of Bittern Lake and Gwynee declined sharply while their populations grew (300 per cent and 70 per cent respectively), and des-

1. For example, see: J.F.G. Hodge. The Prediction of Trade Center Viability in the Great Plains, unpublished Ph. D. thesis, M.I.T., 1965, pp. 29-32; Saskatchewan, Royal Commission on Agriculture and Rural Life, Report No. 12, Service Centres, Regina, 1957, pp. 123, 124.

TABLE XXIV

POPULATION CHANGE, 1921-1961 - THE SMALL CENTRES

	1921	1931	1941	1951	1961
Bashaw	433	385	494	603	614
Mirror	381	534	570	635	577
Hay Lakes	97	125	154	231	233
Edberg	98	131	132	188	179
New Norway	137	142	169	258	263
Ferintosh	144	161	169	205	174
Meeting Creek ¹	---	76	108	114	71
Gwynee	---	66	77	65	109
Armena	---	9	27	45	32
Bittern Lake	48	47	50	25	76
Dorenlee	---	31	43	22	24
Duhamel	---	---	32	23	22
Alix	282	241	360	461	631
Donalda	248	169	206	318	289
New Sarepta	---	58	103	188	184

Sources: Dominion Bureau of Statistics, Census of Canada, 1961 and unpublished data provided by the Dominion Bureau of Statistics.

1. Blanks indicate that figures are not available.

pite little change in their respective populations, the percentage postal revenues of Mirror, Hay Lakes, Edberg and Donalda decreased, and Bashaw's increased sharply. The total population of the ten surveyed centres increased by approximately 20 per cent between 1941 and 1961; their overall commercial decline has occurred despite population increase.

Businessmen interviewed considered that losses in rural trade have been partly off-set by an increase in the population - and hence demand - within some centres. However only Alix, Gwynee and Bittern Lake populations have grown significantly since 1951, and only Alix has improved its status according to the postal revenue

index. Ferintosh and Meeting Creek businesses have undoubtedly suffered because of depopulation in these centres (1951-61, fifteen per cent and thirty-eight per cent decreases, respectively), but population change within small centres has not been a significant factor of change in their commercial importance.

Population increase has been greatest in those small centres which are nearest to large ones; and the proportion of inhabitants who are not employed in "central place functions" in at least some of the surveyed centres has increased in recent years. Residents of Gwynee, Bittern Lake and New Norway commute to work in Camrose or Wetaskiwin, and in several centres interviewees mentioned that an increasing number of retired farmers and active farmers now live within the trade centre.

The post-war increase in the populations of the large centres has been of much greater magnitude and is indicative of the growth in their commercial importance.

TABLE XXV

POPULATION CHANGE, 1921 - 1961 - THE LARGE CENTRES

	1921	1931	1941	1951	1961
Red Deer	2,328	2,344	2,924	7,575	19,612
Camrose	1,892	2,258	2,598	4,131	6,939
Wetaskiwin	2,061	2,125	2,318	3,842	5,300
Ponoka	712	836	1,306	2,574	3,938
Stettler	1,416	1,219	1,295	2,442	3,638
Lacombe	1,133	1,259	1,603	2,277	3,029

Source: Dominion Bureau of Statistics, Census of Canada, 1961.

Increases in their local (i.e. non-basic) markets have helped large centre businesses become more competitive in rural trade. Some of the increase in their postal revenues is due to population increase but a significant part is due to the increased centralization of rural service. The latter is the more fundamental causal factor because it is the rural population which provides the "basic" support for the economy of a rural service centre.

B Rural Population

The Rural Household and Farm Survey showed that the number of farm employees has decreased to the point of insignificance and nearly 30 per cent of surveyed farms have increased in size since 1945.² There has been a decrease in the number of farm households and farm employees in the study area.

The total rural population in the study area (see Figure 9) decreased by 23 per cent between 1941 and 1961.³ It increased by approximately 6 per cent in the decade 1931-41, a period in which the small centres were already declining, but since 1941 rural depopulation (1941-51, 15 per cent decrease; 1951-61, 10 per cent decrease) has coincided with the decline of the small centres.

Rural depopulation has a greater adverse effect on small centres than on large centres because a greater proportion of the business in a small centre is with the surrounding rural population.

2. The present average size of surveyed farms is approximately three quarter-sections; the average in 1945 was closer to two quarter-sections.

3. The forty-three townships: total rural population, 1931 - 11,895; 1941 - 12,596; 1951 - 10,747; 1961 - 9,639. The total rural population is much larger than the total population of the small centres.

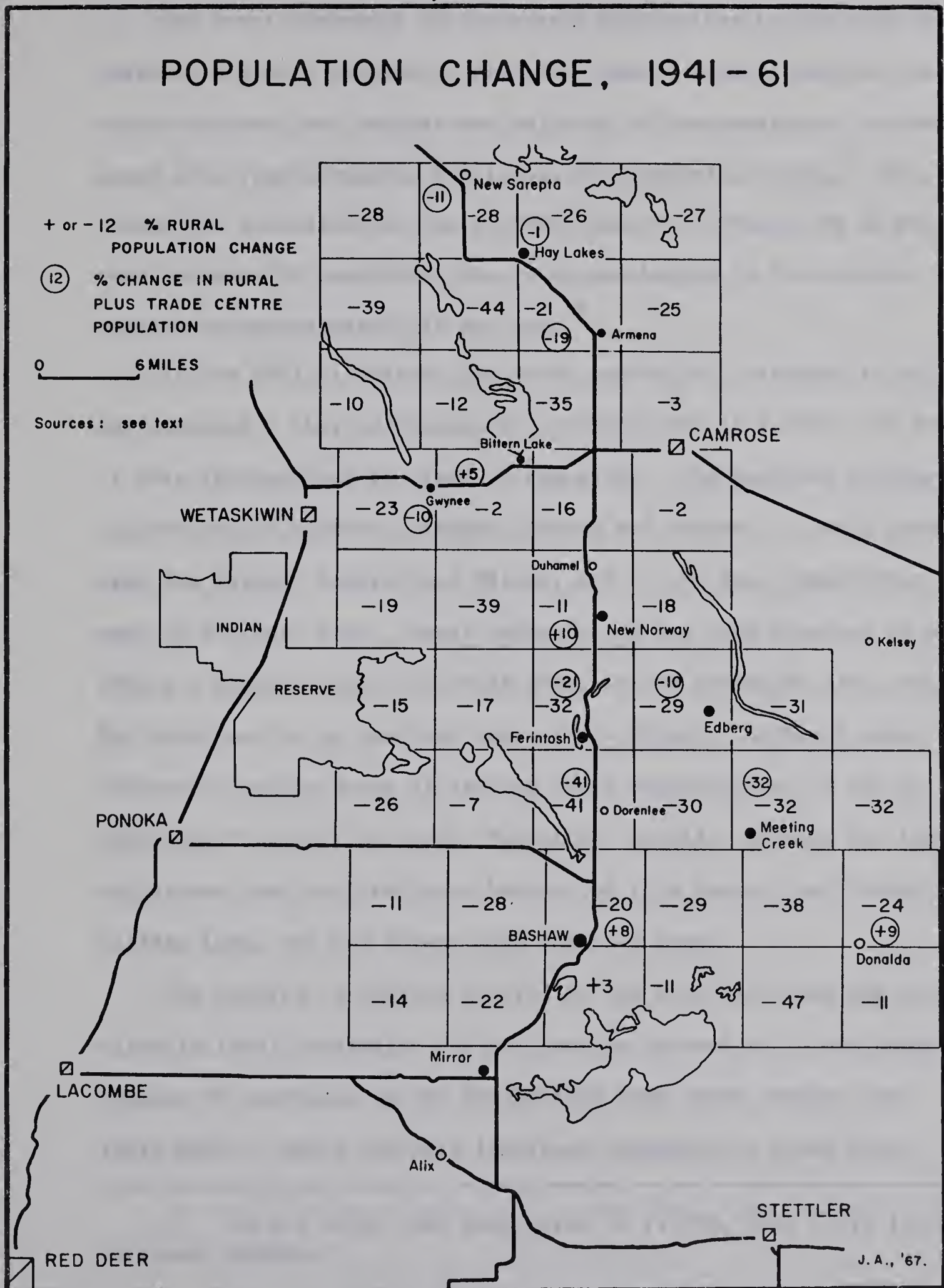
Where rural population densities are low trade centres tend to be spaced further apart, and depopulation can lead to a decrease in the number of centres of a given class. Individual centres are deprived of a threshold population close at hand, and they may not have sufficient drawing-power to attract customers from further away. Thus rural depopulation leads to readjustments in the rural service system. While rural depopulation does not directly benefit the rural trade of large centres, they benefit indirectly from its adverse effect on the economy of small centres. It can be concluded that the decline in rural population has been a significant factor contributing to the decline of the small trade centres, and the growth of the large.

C Population Change Distribution

Variations in the degree of change in the rural population and the total population (trade centre and rural) within the study area are shown in Figure 9. The percentage change in population between 1941 and 1961 is given for each of the forty-three townships⁴ which include nearly all the area served by the small surveyed centres. Estimation of change within trade-areas as such is not attempted because of the high probability of error, especially as trade-area boundaries have shifted since 1941. But it is possible to indicate which small centres have suffered most from depopulation in their zones of influence.

4. Changes in the rural population and the total population of each township were calculated from data supplied to the Battle River Regional Planning Commission by the Dominion Bureau of Statistics, and from data published in the Census of Canada, 1961.

Figure 9



The rural component of trade-area populations is the more important, not only because it provides "basic" support for the trade centre economy, but because the majority of the population in the study area (excluding the population of Camrose) is rural.⁵ Although the population in the surveyed centres increased by 20 per cent between 1941 and 1961, the total population in the area decreased by approximately 17 per cent.⁶

In the 1941-61 period, the rural population increased in only one township — that adjoining the southern edge of Bashaw, and some of this increase may be urban in character. The smallest decreases occurred around Camrose, between Camrose and Gwynee, in small areas near New Norway, Donalda and Bashaw, and in the area immediately west of Red Deer Lake. Rural depopulation has been greatest in the Edberg — Meeting Creek — Donalda area, in the Ferintosh area, around Hay Lakes and in an area due west of New Norway. Although zones of influence include areas of varying rural depopulation, it can be concluded that Meeting Creek, Ferintosh, Donalda, Edberg, Hay Lakes and Armena have suffered most because of this factor, and Gwynee, Bittern Lake, and New Norway have suffered least.

The decline in overall population has been less than the decline in rural population (17 per cent as opposed to 23 per cent) because of increases in the populations some trade centres (see Table XXIV). While the more important component in trade-area

5. Of the total 1961 population of 11,938, only 2,299 lived in trade centres.

6. From 14,386 in 1941 to 11,938 in 1961.

population is rural, the number of inhabitants within the trade centre could be decisive in maintaining a threshold population (e.g. Mirror's relatively large population provides much of the support for businesses in that centre). The distribution of overall change is therefore a useful indicator of differential change in the potential support for small centre businesses. By this criterion Meeting Creek and Ferintosh have been most adversely effected, and New Norway, Donalda, Bashaw, Gwynee, Bittern Lake and Hay Lakes have suffered less adverse effects.

Bashaw's trade has grown in spite of depopulation in its trade-area, and may indeed have benefited indirectly from it. Bashaw has gained customers from Ferintosh, Meeting Creek and Donalda and the competitiveness of these centres, particularly the first two, has been reduced by depopulation. Present rural population densities are lowest in the area between Edberg and Donalda (see Figure 5).

Rural depopulation has indirectly benefited the large centres and Bashaw, and has detracted from the economies of the other small centres. Depopulation probably contributed to the decline of Doreenlee, Duhamel, Lamerton and Viewpoint, but the variation in population change has not been sufficient to make this a major factor in the differential decline of the small centres. Meeting Creek and Ferintosh which have suffered most from depopulation have not declined economically at as fast a rate as Bittern Lake and Gwynee.

The small centres declined at a time when rural population was on the increase (1931-41), so depopulation was not an initial cause of their decline; but since 1941 it has been a significant contri-

buting factor. More important, however, have been recent changes in the trading practices of the existing rural population.

Chapter 11

Changes in the Trading Practices of Rural Residents

The main cause of change in trade centres economies has been change in the trading practices of rural residents. Ninety-six (or 82 per cent) of the 117 rural interviewees reported recent changes in their trade in particular centres. The extent of change was often underestimated, many interviewees could not remember in which year the changes occurred, and a few gave contradictory accounts of trade changes. The data has therefore to be handled with caution. In general the changes which were mentioned occurred in the late 1950s or more recently.

Yet pronounced trends could be deduced from these data, and it was possible to reach definite conclusions on recent centralization trends in rural services. These conclusions were reached by analysing changes according to trade centre accessibility zones, and by referring back to the completed questionnaires and the reasons interviewees gave for transferring trade from one centre to another.

Thirty tables showing recent changes in the use made of facilities in eighteen trade centres were prepared from the tables obtained from the computer. They showed the percentage of linkages in each trade centre accessibility zone in which more use and less use is now made of the respective centre, for each of the thirty variables.¹ Twenty-eight of these were classes of commodities, and two were trip frequency and percentage expenditure. Six tables

1. See Chapter 2, Section B; and Appendix D.

were prepared to show trade patterns in six commodities in the past only and these were compared with present day patterns.²

The tabulation of data on trade changes shows which centres have lost and which have gained in trading importance as far as interviewees are concerned, even if the quantity of change is understated. It was also possible to see in which commodities these changes took place, and to relate them to present trading practices.

A. Changes in Trip Frequencies

From Table XXVI it is clearly seen that interviewees are visiting all the small centres, except Bashaw, less frequently than formerly. Edberg is the only one of these small centres which any interviewee claims to visit more frequently and this increase is cancelled out by a decrease of similar proportions. The diminished frequency of trips to Mirror, Ferintosh, Meeting Creek, and Dorelee is particularly striking, and both Donalda and Alix are also less frequently visited than formerly.

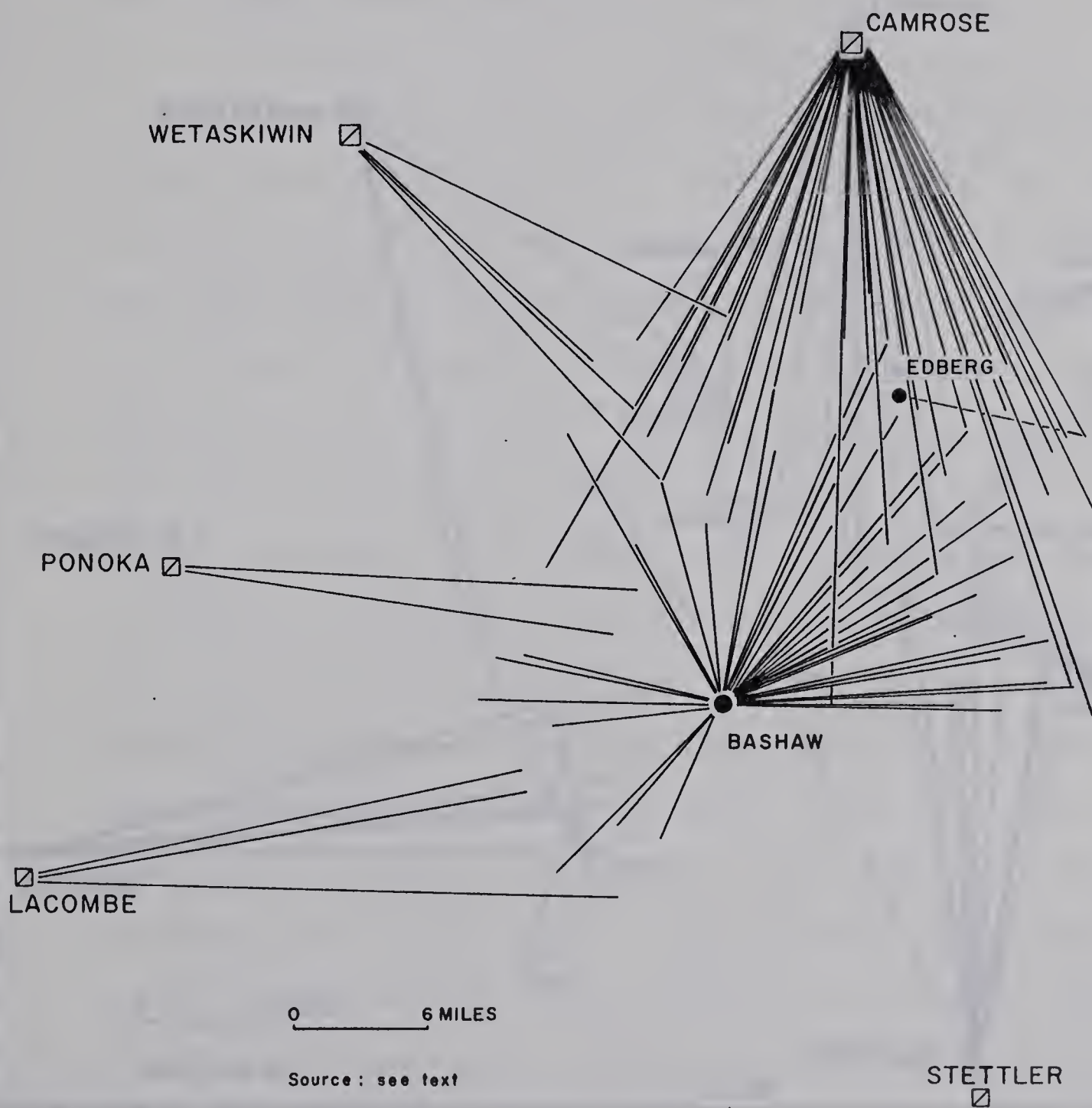
Residents in zones 2 to 6 - Bashaw are visiting that centre more frequently, the increase being most striking in the outer zones; and Stettler and, to a lesser extent, Lacombe are now less frequently visited. In zones 7 and 8 of Camrose and of Wetaskiwin some interviewees are visiting the respective centres less frequently. However Ponoka, Wetaskiwin, and especially Camrose are being visited more frequently than they were in the past (see Figure 10). No

2. See Chapter 7, Section F, above.

Figure 10 (a)

CHANGE IN SHOPPING TRIP FREQUENCIES ¹

———— INCREASED FREQUENCY

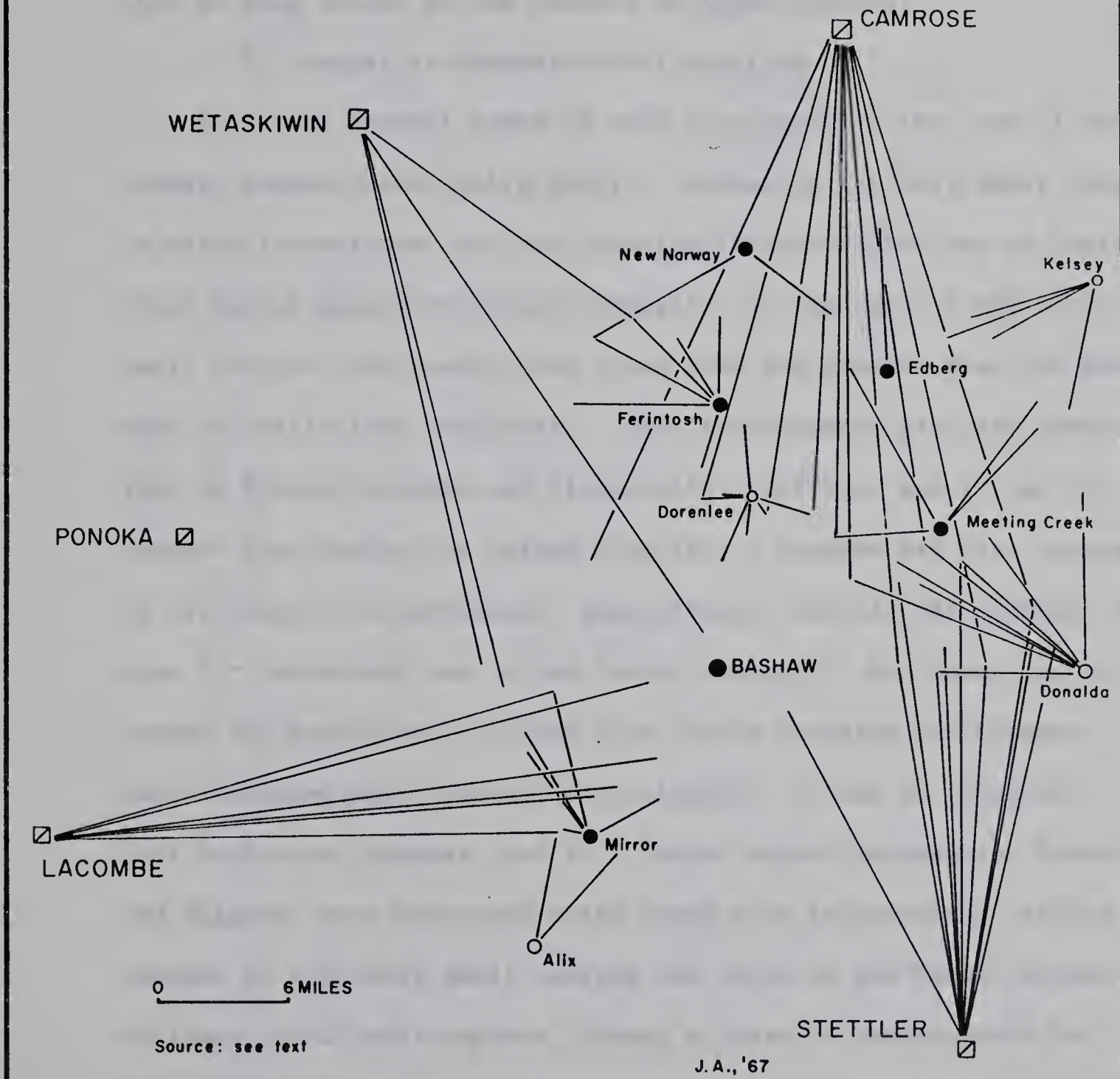


1. In the post-war period; see p. 130.

Figure 10 (b)

CHANGE IN SHOPPING TRIP FREQUENCIES ¹

— DECREASED FREQUENCY



1. In the post-war period; see p. 130.

change was recorded in the frequency of trips to Red Deer, and there has been only a slight increase in the frequency of visits to Edmonton and Calgary. It can be inferred that Bashaw has gained in trip frequency at the expense of the small centres closest to it, and also to some extent at the expense of large centres.

B Changes in Expenditure Allocations

This same general trend is more pronounced in the case of percentage expenditures (Table XXVII). Bashaw is the only small centre in which interviewees are now spending larger proportions of their total annual expenditure than formerly. In the case of the other small centres, the numbers who spend less are greater than the members who visit less frequently. Some interviewees are also spending less in Ponoka, Lacombe and (especially) Stettler, and it can be assumed that Bashaw has gained from this. Camrose has also increased its share of interviewees' expenditures, and all the linkages in zone 7 - Wetaskiwin are in the "more" category. No change was recorded for expenditures in Red Deer, while Edmonton and Calgary have increased their shares only slightly. It can be concluded that Bashaw and Camrose, and to a lesser extent Wetaskiwin, Edmonton, and Calgary, have increased their trade with interviewees, at the expense of the other small centres and three of the large centres. Of these other small centres, Edberg's share of expenditures has decreased least.

C Trade Changes in Specific Commodities

Change in the trade patterns in specific commodities varied in amount. These variations afforded further insight into the recent

TABLE XXVI
Trip Frequency Changes and Accessibility

	MORE									LESS								
	Zones:									Zones:								
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
Edmonton									10									-
Calgary									10									-
Red Deer							-	-	-							-	-	-
Camrose					100	92	62	25						-	-	17	69	
Wetaskiwin							60	25	-							20	75	-
Ponoka					-	33	-	-	-					-	-	-	-	-
Lacombe						20	25	-	-						20	63	-	-
Stettler						-	-	-	-						50	100	-	-
Bashaw	-	33	57	67	79	100	-	-	-	-	-	-	-	-	-	-	-	-
Mirror	-	-	-	-	-	-	-	-	-	40	100	100	100	-	-	-	-	-
Edberg	-	-	-	10	-	-	-	-	-	-	-	12	-	-	-	-	-	-
Ferintosh	-	-	-	-	-	-	-	-	-	-	25	100	100	-	-	-	-	-
New Norway	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-
Meeting Creek	-	-	-	-	-	-	-	-	-	-	-	10	100	50	-	-	-	-
Doreenlee	-	-	-	-	-	-	-	-	-	100	100							
Donalda	-	-	-	-	-	-	-	-	-		25	67	100	84	-	-	-	-
Alix	-	-	-	-	-	-	-	-	-		-	33	100	-	-	-	-	-
Kelsey			-	-	-	-	-	-	-			100	100	100				

TABLE XXVII
Percentage Expenditure Changes and Accessibility

	MORE									LESS								
	Zones:									Zones:								
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
Edmonton									10									-
Calgary									10									-
Red Deer							-	-	-							-	-	-
Camrose					100	92	67	50						-	-	19	50	
Wetaskiwin							100									-	100	
Ponoka					-	-	-	-	-					50	57	-	-	-
Lacombe						-	25	-	-						-	63	-	-
Stettler						-	-	-	-						100	100	-	-
Bashaw	-	67	75	75	94	100	-			-	-	-	-	-	-	-	-	-
Mirror	-	-	-	-	-	-	-			100	100	-	100	-	-	-	-	-
Edberg	-	-	-	-	-	-	-			-	-	33	33	-	-	-	-	-
Ferintosh	-	-	-	-	-	-	-			-	75	100	100	-	-	-	-	-
New Norway	-	-	-	-	-	-	-			100	-	100	100	-	-	-	-	-
Meeting Creek	-	-	-	-	-	-	-			-	-	100	100	-	-	-	-	-
Dorenlce	-	-	-	-	-	-	-			100	100							
Donalda	-	-	-	-	-	-	-			50	75	100	100	84	-	-	-	-
Alix	-	-	-	-	-	-	-			-	-	-	100	100	-	-	-	-
Kelsey			-	-	-	-	-					100	100	100	100			

centralization of rural service. No changes were recorded in the following: entertainment, mail deliveries, seed grain purchasing and legal and veterinary services. Trade changes in four commodities were relatively insignificant: Camrose has a slightly increased share of the trade in construction materials, insurance and administration services, and Bashaw's share of the fertilizer trade has recently increased; Donalda's trade in construction materials and fertilizers has decreased slightly while Edberg's trade in insurance and Meeting Creek's administration service have also decreased. Transfers of trade in the remaining nineteen commodities have been much more significant. They show that centralization has occurred at different levels and that the recent growth of Bashaw has involved some decentralization.

Grain Marketing and Mail Pick-Up: Interviewees market grain and collect mail only in the small centres, but there has been some centralization of these services. Dorenlee no longer has a post office and much less and slightly less use is made of the offices in Kelsey and Meeting Creek respectively. Transfers of trade in grain (Table XXVIII) show considerable centralization at the small centre level, Bashaw being the main beneficiary. The elevators in Viewpoint and Lamerton closed recently. New Norway and to a lesser extent Edberg benefited from the closure of Viewpoint elevator, while Bashaw, and also Mirror, gained when grain marketing ceased at Lamerton. Farmers in zones 1, 2 and 3 - Meeting Creek continue to market grain in Meeting Creek but in decreased quantities; Bashaw, and perhaps Edberg and Ferintosh to a small

extent, have benefited. Interviewees also market less grain in Dorenlee and Kelsey. Transfer of grain marketing from Dorenlee and Meeting Creek to Bashaw or Ferintosh may be partly explained by the fact that in the latter centres there are more of the other services demanded by the farmer. It may be for the same reason that Mirror did not gain as much as Bashaw from the closure of Lamerton elevator, although Lamerton is closer to Mirror.

Livestock, Appliances and Furniture, Clothing, and Medical Services are purchased wholly or mainly in large centres and in Bashaw. There has been some decentralization of trade in these commodities in favour of Bashaw, particularly outstanding in the cases of medical services and livestock (Tables XXIX and XXX). Medical services and an auction mart were established recently in Bashaw, and it is perhaps because of this recency that interviewee response was unusually good. Bashaw has gained in medical services at the expense of Stettler, Ponoka and Lacombe, and slightly at the expense of Camrose. Its increased importance as a centre for purchasing livestock has coincided with interviewees purchasing less in Stettler, Ponoka and Wetaskiwin. There has been a slight increase in livestock purchasing and marketing in Edmonton, and Bashaw's importance for livestock marketing has greatly increased, while a slight decline was recorded for Stettler and Ponoka.

Trade in clothing, appliances and furniture has increased in Bashaw, and also in Edmonton. Bashaw has gained from Stettler and Ponoka mainly, but it has also gained from Edberg, Donalda and Mirror. Thus centralization and decentralization have occurred to-

TABLE XXVIII
Grain Marketing Changes and Accessibility

	MORE									LESS								
	Zones:									Zones:								
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
Edmonton																		
Calgary																		
Red Deer																		
Camrose																		
Wetaskiwin																		
Ponoka																		
Lacombe																		
Stettler																		
Bashaw	-	11	8	6	3	-				-	-	-	-	-	-			
Mirror	17	-	-	-	-					-	-	-	-	-	-			
Edberg	-	-	-	7	-					-	-	-	-	-	-			
Ferintosh	-	-	25	-	-					-	-	-	-	-	-			
New Norway	-	20	33	-	-					-	-	-	-	-	-			
Meeting Creek	-	-	-	-	-					17	-	50	-	-	-			
Doreenlee	-	-								-	100							
Donalda	-	-	-	-	-	-				-	-	-	-	-	-			
Alix	-	-	-	-	-	-	-					-	-	-	-			
Kelsey			-	-	-	-	-					50	50					

TABLE XXX

Livestock Purchase Changes and Accessibility

[illegible]

together and both benefited Bashaw.

Groceries are purchased in both large and small centres, but considerable centralization has occurred, mainly to Camrose but also to Bashaw (Table XXXI). Interviewees reported that they buy less goods in all the other small centres, Mirror, Alix and Kelsey excluded. The decrease for New Norway and Ferintosh is particularly striking. Ponoka's share of the food trade has also decreased and it can be assumed that Bashaw has been the main beneficiary. Again centralization has been accompanied by some decentralization. Centralization of trade in "weekly groceries" has been more pronounced and there has been less decentralization from large centres to Bashaw.

From the Trade Centre Business Survey it was seen that grocery and general stores in small centres are suffering in varying degrees from the competition of supermarkets, established in recent years in the large centres and in Bashaw. Centralization has been achieved by an increase in the size of establishments and attendant economies of scale, and by an increase in the number of such establishments in the larger centres. The increased mobility of the rural population has been both a cause and an effect of centralization. The supermarket has taken trade from the local grocery store, while many of the general stores surveyed have lost all or nearly all of their dry goods trade to department stores and specialized shops in the larger centres. Each rural interviewee was asked whether he bought more or less in supermarkets and department stores than in the past, and if there had been a change the interviewee was asked to state the reasons.

TABLE XXXI

Grocery Purchase Changes and Accessibility

[illegible]

Sixty-one, (or just over half of the) interviewees claimed they now buy more in such stores, and only two interviewees (both members of reduced households) buy less. The main reasons given were: relative cheapness, greater variety of goods, fresher produce, and greater convenience for bulk buying. Several interviewees said they now go more frequently to centres which have these larger establishments, and one interviewee said he does more trade in supermarkets because there are now more supermarkets than formerly!

Farm Machinery and Machinery Servicing: trade in both has become more centralized, especially in the case of the former (Table XXXII). This is significant as far as the centralization of trade in terms of dollars is concerned, for farm machinery is now very expensive and can constitute a large part of a farmer's expenditure. Both Bashaw and Camrose have increased their trade in the survey area, while that of Ponoka, Stettler, Donalda, Alix and New Norway has declined. Of the small surveyed centres, Edberg sells significant quantities of farm machinery (see Table XXII) but none of the interviewees mentioned any change with respect to Edberg.

Farm machinery servicing remains largely decentralized, though in Ferintosh, New Norway, Donalda and Alix it has decreased slightly. The only centre with significant gains in machinery servicing is Camrose.

Automobiles, Trucks and Automotive Servicing: trade in these commodities has not been subject to as much change as farm machinery purchasing. Only Camrose has a significantly increased trade in these commodities, Bashaw's trade has not changed, and a few small

TABLE XXXII

Farm Machinery Purchase Changes and Accessibility

	Zones:									MORE									LESS								
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
Edmonton									-																		-
Calgary									-																		-
Red Deer							-	-	-															-	-	-	-
Camrose					100	42	23	5															-	-	3	30	
Wetaskiwin							-	-	-																		-
Ponoka					-	-	-	-	-														33	14	-	-	-
Lacombe						-	-	-	-															-	-	-	-
Stettler						-	-	-	-															10	-	-	-
Bashaw	-	12	8	7	-	-	-	-	-					7	-	-	-	-									-
Mirror	-	-	-	-	-	-	-	-	-					-	-	-	-	-									-
Edberg	-	-	-	-	-	-	-	-	-					-	-	-	-	-									-
Ferintosh	-	-	-	-	-	-	-	-	-					-	-	-	-	-									-
New Norway	-	-	-	-	-	-	-	-	100					-	-	-	-	-									-
Meeting Creek	-	-	-	-	-	-	-	-	-					-	-	-	-	-									-
Doreenlee	-	-	-	-	-	-	-	-	-																		-
Donalda	-	-	-	-	-	-	-	-	-			100	33	-	-	-	-	-									-
Alix	-	-	-	-	-	-	-	-	-			-	25	-	-	-	-	-									-
Kelsey			-	-	-	-	-	-	-			-	-	-	-	-	-	-									-

centres, notably Donalda and Ferintosh, have experienced slight decreases.

Milk Products: Of the twenty-eight goods and services in which trade changes were tabulated, only in milk products has Bashaw experienced a recent decline. There is no collection service for Bashaw creamery, and the collection services of creameries in Donalda, Red Deer, Camrose and Wetaskiwin have recently expanded their operations in the survey area. In consequence, fewer farmers are delivering cream to Bashaw (in zones 2, 3, 4 and 5), Edberg creamery has closed down and farmers in zones 1 to 5 - Edberg mentioned that they no longer deliver milk products there. There is no collection service for Alix creamery and deliveries to it have decreased. Trade with Ponoka creamery has also decreased slightly, largely because of Red Deer Competition, though there is a collection service to Ponoka.

It would appear that trade in milk products has been centralized because of expanded collection services, and Donalda as the only small centre creamery which collects cream at the farm is the only small centre withstanding the competition from larger places.

Bulk Fuel and Oil Delivery: this is one of the more decentralized of rural services, but some centralization has recently occurred. Camrose and Wetaskiwin have increased their deliveries on the northern fringe of the survey area, and Bashaw has gained some trade in an area over ten highway-miles from the centre (in zone 4 - Bashaw). Donalda and Ferintosh have lost some trade to Bashaw, while both Ferintosh and New Norway have recently experienced slight losses to

Camrose and Wetaskiwin. These changes are all very recent and may signal the beginning of a new centralization trend.

In trade in animal feed Bashaw has gained slightly at the expense of Donalda and Ferintosh, and Camrose has also gained. Wetaskiwin and Camrose are the only centres which have increased their banking services to interviewees; no interviewees reported any change in their use of facilities in Bashaw, and the Donalda bank does less business in the survey area than formerly. The other small centres do not have a bank. In the hardware trade Ferintosh, New Norway and Donalda attract fewer customers, and the only centre for which an increase in hardware supply was registered is Camrose.

Data on pre-1939 trading patterns in six commodities, though scanty, showed that rural service was then much more decentralized than it is today. Very little use was made of the large centres. For instance, no interviewees reported going to a large centre for farm machinery servicing prior to 1939, whereas today practically all the farmers interviewed get some servicing done in large centres (see Table XXII). Most of the small centres dominated their immediate surroundings for machinery sales (in zones 1 and 2) and only a few interviewees purchased machinery in Camrose and Wetaskiwin. Then, as today, Bashaw was the most important of the small centres, and Mirror's rural service was very limited.

D Trade Transfers

The tables show which centres have gained or lost trade but they do not indicate explicitly the net transfers of trade which have occurred. For this it was necessary to refer to the data in

their original form, to the questionnaires where interviewees stated categorically that they had transferred trade from centre "A" to centre "B", or where such a net transfer could be safely deduced. These transfers can be divided into two main classes: (1) those involving increased centralization and (2) those involving decentralization of rural service.

Centralizing transfers were the more numerous and, in total, account for a much greater amount of trade change than decentralized transfers. Thirty-four interviewees reported a net transfer of trade from small centres (excluding Bashaw) to one or more of the large centres outside the survey area; sixteen have recently transferred trade from small centres to Bashaw; and twelve have transferred trade from small centres to Bashaw and one or more large centre, a total of sixty-two interviewees. No net transfers from Bashaw to a large centre were reported, or deduced from questionnaire data. Transfers to a large centre included: fourteen from Ferintosh, (eight to Camrose, six to Wetaskiwin), six from New Norway (four to Camrose, two to Wetaskiwin), ten from Edberg to Camrose, seven from Meeting Creek to Camrose, and three from Mirror to Lacombe. Camrose benefited most and there was no concrete evidence of any net transfers to Ponoka or Stettler. Small centres from which there have been net transfers of trade to Bashaw include: Meeting Creek (ten), Ferintosh (eight), Donalda (six), Mirror (five), Edberg (two), and Alix (one). Five interviewees claimed they now trade more in Camrose but did not mention doing less trade in any other centre, and several do more business in Edmonton and Calgary.

In addition to the sixty-two interviewees who gave evidence of net trade transfers from specified small centres to Bashaw, Camrose, Wetaskiwin and Lacombe, a few provided evidence of increased centralization among the other small centres. Thus in grain marketing Edberg has gained slightly from Viewpoint, Kelsey and Meeting Creek; Ferintosh has gained slightly from Dorenlee; and Mirror from Lamerton. Donalda creamery gained a few suppliers when Edberg creamery closed down. However these gains were usually cancelled out by a decrease in trade in other commodities. Readjustments at the lowest level of the central place hierarchy have been insignificant in comparison to centralization to large centres and Bashaw.

The counter-trend of decentralization is much less obvious and in terms of net transfers of trade it involves only one small centre - Bashaw. Twenty interviewees explicitly reported a recent net transfer of trade from a large centre to Bashaw: eight from Ponoka (seven in zone 6, one in zone 7 - Ponoka), five from Stettler (two in zone 6 -, three in zone 7 - Stettler), five from Camrose (four in zone 7 -, one in zone 8 - Camrose), and two from Lacombe (both in zone 7 - Lacombe). Only one of the twenty is in zone 7 - Bashaw (the equivalent of over twenty-eight highway-miles from Bashaw) and two are in zone 6 - Bashaw. The remainder are within twenty highway-miles (or its equivalent on gravel roads) of Bashaw: four in zone 5, five in zone 4, four in zone 3, three in zone 2 and one in zone 1. They are all nearer to Bashaw than to the large centre from which trade has been transferred, with the exception of one interviewee who is nearer Stettler (zone 6 - Stettler, zone 7 - Bashaw). The

greater accessibility of Bashaw has been an important factor in these transfers.

Five of these interviewees have also transferred trade from a small centre to Bashaw, so the latter has benefited directly and concurrently from both decentralization and centralization. Several of the twenty interviewees have also transferred trade from a small centre to a large centre but their trade in the large centre has experienced a net decrease in favour of Bashaw. In addition to the twenty interviewees, one farmer said he has transferred trade from Stettler and Lacombe to Bashaw and Camrose, another that he transferred trade from Alix and Ponoka to Bashaw and Camrose. And nine interviewees do more trade in Bashaw but did not give any indication of doing less in another centre; in these cases it was not possible to say whether centralization, decentralization or both were involved.

In the Rural Household and Farm Survey the only other evidence of decentralization - of a small centre taking trade from a large one - concerned the creamery in Donalda. Six interviewees reported transferring from a large centre creamery (Ponoka, Wetaskiwin, Camrose and Red Deer). It is significant that the only business in Bashaw which has suffered a decrease in rural support is the creamery. In this case it is Donalda which has benefited from the distance factor. There is a collection service for Ponoka creamery within the Bashaw area but there is no collection for Stettler in the Donalda area. Nine interviewees have transferred from Bashaw creamery to Donalda, mainly because there is no collection service

to the former. However this very limited decentralization to Donaldda does not compare with the recent decentralization to Bashaw, and most of the farmers who have transferred to Donaldda creamery either do less total trading in Donaldda than formerly, or they have never traded in any other commodities in that centre. As well as losing trade to Donaldda, the creamery in Bashaw has lost trade to creameries in Red Deer, Ponoka and Camrose. However none of the farmers concerned has thereby decreased the total amount of his trading in Bashaw because all do more trade there in other commodities.

No interviewee reported a net decrease in his trade in Bashaw and the centre has gained both directly and indirectly from the centralization of trade away from the other small centres. The decline of trade in the small centres left a vacuum, as it were, which has been at least partially filled by the recent growth of Bashaw. The transfer of trade from Stettler, Lacombe and Ponoka, and to a lesser degree from Camrose and Wetaskiwin, to Bashaw has been in the nature of a compromise solution between the benefits of centralization on the one hand and the inconvenience of the distance factor on the other.

Chapter 12

Factors in the Centralization Process¹

The process of centralization can be seen as a competition between two sets of forces. One set favours the larger centres and tends to increase the concentration of trade in them; the other favours the smaller and more closely spaced trade centres. The needs of rural residents, their mobility and their density and distribution are subject to change and hence the most economical way of servicing the rural community varies with time. Conversely, there is variation in the most convenient way the rural resident may purchase his requirements.

The optimum spatial arrangement of trade centres – and a state of equilibrium in the competition among them – is never reached, because between "cause" and "effect" there is a time-lag during which conditions continue to change. Yet movement towards a hypothetical "ideal" continues and it entails a series of readjustments in the rural service system.

The advantages of spatial concentration and economies of scale, and the counteracting inconvenience of distance are the main factors in the centralization process. Change in the interaction of these forces has been the main cause of increased centralization. There are, however, many other contributory factors. Rural depopulation and changes in farm technology and marketing methods have favoured the larger trade centres. On the other hand, the difficulty of redeeming fixed capital in a declining centre, the less impersonal

1. This section is based mainly on data already presented and on some additional information from the two surveys.

nature of transactions in a smaller place, and improvement of utilities and other amenities have contributed to the continued existence of the smaller centres. In addition, the actions of a single firm, individual or "pressure group" can significantly affect centralization processes.

The present arrangement of centres in the study area is essentially a legacy from the first two decades of this century, when horse-drawn transport focused on stopping points on the railroad. Thus the arrangement of centres was in part determined by these transport forms, but better transportation has since made the larger centres much more accessible to the mass of rural residents. Improvements in the transportation system, and the consequent decrease in the inconvenience of distance have probably been the single most important factor in the increasing centralization of rural service.

As the accessibility of the larger centres increased more farmers came to trade in them and the advantages of economies of scale and the spatial concentration of businesses were enlarged. Inevitably, small centre establishments lost trade and consequently, their economies of scale, never as great as those of some large centre businesses, decreased. Small centres lost functions and as businesses closed down the economic advantages of spatial concentration were diminished and total trade decreased. The farmer now had to go to a large centre for more of his requirements and (to complete the vicious circle) once in a large centre it was often convenient and economical to purchase items which were also obtainable in his local centre.

The forces involved in the centralization process interact in a spatial framework and must be viewed in terms of relative locations. Distance from large centres has probably been the main factor in the variation in rates of small centre decline but centralization has involved shifts in trade from one small centre to another, and it has also led to some decentralization (i.e. to Bashaw). While the relative importance of these interacting forces cannot be precisely measured, the complexity of their interaction can be analysed and an attempt can be made to put the factors in their proper perspective.

A. Centralizing Forces

Over seventy rural interviewees explicitly stated their reasons for doing more trade in Bashaw and large centres. Forty-four gave as a main reason the better selection of goods and services in these centres, and the quality of service was thought to be higher than in smaller centres. Some mentioned lower prices as a factor and several said they are forced to go more frequently to a large centre for farm machinery servicing and other requirements and therefore do more general trading in large places. The recent establishment of medical services, an auction mart, a seed-cleaning plant and other functions and businesses in Bashaw was a main reason given for increased trade in Bashaw. Twenty interviewees who transferred trade from a large centre to Bashaw did so mainly because of improvements in the variety and quality of Bashaw services. Road improvements have probably been the main reason for increased use of the large centres, because these centres have always had a

fairly complete range of services. Twenty-one interviewees gave road improvements as the main reason for increased trade in these more distant centres.

Thus interviewees mentioned or alluded to the three main forces for centralization: economies of scale, benefits from the spatial concentration of functions, and transportation improvements.

In the small surveyed centres the scale of operation and attendant economies of most businesses are low and tend to diminish as the number of functions in the centre decreases (see Table III). In general those small centres with the most functions have best withstood the competition from large centres. The advantages of economies of scale can be seen most clearly by referring to the centralization of the farm machinery and food trade, two of the most important components of rural service. Since 1945 farms have become larger, farm employment has decreased and farm operations have become progressively more mechanized.² Due to technological advances farm machinery has become more varied, complex and costly. Small scale machinery suppliers can no longer carry an adequate stock of machinery and, more important, they cannot carry a full range of spare parts nor provide adequate servicing. Implement manufacturers have therefore withdrawn agencies from small operators and agencies are retained only by businessmen with sufficient capital to carry an adequate stock of parts and a volume of business

2. This discussion is based on Trade Centre Business Survey and Rural Household and Farm Survey information, and on information received from the owner of an implement agency in Wetaskiwin. August, 1965.

that warrants employment of properly qualified service mechanics. Businessmen who meet these requirements are nearly always located in the large centres; for instance there are very few licensed mechanics employed in small trade centres other than Bashaw. Because machinery is now so expensive farmers are willing to travel far to get "good value" (several interviewees now have fewer regular customers for this reason), and while machinery servicing is still available in most small centres it too has become more centralized.

Providing groceries is still an important function of all but the smallest centres, but centralization has proceeded rapidly in recent years. This has been due in part to change in marketing techniques. Large supermarkets, located only in the bigger centres, buy in large quantities from the manufacturer and, according to a number of interviewees, they can sell some items at a lower price than the small operator pays the wholesaler. Economies of scale permit price reductions. The manager of a fairly large Bashaw food store said he relied on a large turnover of goods because profit margins had been reduced in order to compete with large supermarkets. But the volume of business of most small centre food stores is insufficient to allow reduction in profit margins.³ The larger store can carry a larger stock of goods and most household requirements are conveniently on sale under one roof. (This can be compared

3. See also: H.A. Rendall, The Trade Areas of Camrose, Wetaskiwin and Ponoka, unpublished M.A. thesis, University of Alberta, Edmonton, 1962, pp. 91, 92.

with the convenience afforded by a spatial concentration of different functions in one trade centre). Improved domestic refrigeration - electrical power became generally available in rural areas only since the war - encourages the buying of food in bulk but in all the small centres, with the exception of Bashaw, less "weekly groceries" are now sold. Small centre food stores rely mainly on "convenience" trade - day-to-day sales of such items as bread, butter, milk, canned foods, etc. The dry goods trade has been centralized to an even greater degree and sixty-one interviewees mentioned increased trading in supermarkets and department stores. The main reasons given were the greater variety and lower price of goods and the fresher produce in the large stores, and their convenience for bulk buying.

It was indicated by interviewees that road improvements in the study area started after 1945 (several said that prior to 1945 most roads were of "dirt" construction) and that since the war there has been a great increase in the number of privately-owned cars. All but three of the rural interviewees said that main and local roads have recently been greatly improved and of special importance in the centralization of trade has been the paving of Highway 21, and, to a lesser extent, of Highway 53, since the late 1950's. Farmers in the Ferintosh area calculated that the time taken to get to Camrose has been practically halved and others said that Ponoka, Wetaskiwin, Bashaw and Edmonton are much more accessible than formerly. Twenty-two Bashaw businessmen thought highway improvement had helped their businesses but in the other surveyed

centres only a few hotels and service stations appear to have benefited. As one perceptive interviewee put it, roads lead to as well as away from a centre but despite transportation improvements few small centre businesses have expanded trade-area and all the small centres except Bashaw have suffered to varying degrees from the increase in the mobility of the rural population.

Improvement to local (unpaved) roads has been less significant though several people said it has helped make large centres more accessible in winter and spring — in the past, roads were sometimes impassable and the farmer was more dependant on his local centre. Location relative to the highway is still a significant factor but one impossible to measure exactly. Edberg and Meeting Creek have probably suffered less from highway improvements than Ferintosh, New Norway or Bittern Lake but a highway location can have advantages even for small centres — it encourages development (e.g. commuters living in Bittern Lake) and it brings "highway-trade" (e.g. in Gwynnee and New Norway). But it can be concluded that improvements in transportation and the road network have had a detrimental effect on most small centres and, other things being equal, those beside a highway generally suffer most.

Advertising, an advantage accruing from large scale economies, has also contributed to the centralization of trade. Over thirty Bashaw firms advertise on radio and in newspapers but in the other surveyed centres few and in some cases no businesses (e.g. in Meeting Creek and Armena) advertise. Machinery dealers however generally do advertise as farmers will travel long distances to obtain new or used equipment. Nation-wide television advertising is also a contri-

butory factor. One interviewee said it has increased the variety of brands of a commodity demanded by customers but many village stores cannot carry the required stock.

A decrease in catalogue buying has benefited large centres and Bashaw, though without detrimental effect to smaller centres. Thirty-five interviewees now buy less by mail-order because they visit a large centre more frequently and because the selection of goods in Bashaw has improved.

Centralization has proceeded in the framework of the physical environment but this has remained relatively constant and is marginal as a factor of change. However most of the customers in a small centre are farmers whose livelihood depends to some extent on the weather. If crops are poor (or appear as if they will be) business in the service centre may suffer — several interviewees mentioned annual fluctuations in their turnover because of this. Small scale and economically marginal businesses are more vulnerable than large scale operations and such fluctuations may hasten the closure of a declining business and thus accelerate centralization. But if farm incomes increase most additional spending is done in the larger centres.

Population change⁴ has also been a secondary factor of centralization. Changes in the population of small centres were seen to bear little relationship to change in their economic importance, but rural depopulation has indirectly benefited the larger centres. Rural depopulation has been greatest in the Donalda — Meeting Creek — Edberg — Ferintosh area and in the Hay Lakes — Armena area (see

4. See Chapter 10, above.

Figure 9). Meeting Creek and Ferintosh have also suffered internal population decrease.

B Decentralizing Forces

These forces have become comparatively weaker and centralization has been the dominant trend since before the war. Yet most small centres have survived. Interviewees spend most of their money in large centres but they visit small centres more frequently.

Each interviewee was asked the reason for continuing to trade in small centres. Eighty-eight (or 75 per cent) replied that their proximity was the main reason, and of these, thirty-three gave no other reason. Forty-six mentioned "community feeling" — they want the small centre to survive — though some thought local loyalties have been weakened by the increase in mobility. One interviewee considered that centralization of the school system begun in the mid-1930s⁵ was an initial factor in widening the social sphere of rural residents. But small centres continue to serve a useful, and not least a social, function, mainly because of the convenience of proximity and also because of advantages of personal contact.

Probably the main force against readjustment in the rural service system (i.e. against centralization) is the difficulty of redeeming fixed capital in a small and declining centre. Some small centre businesses have been abandoned, but faced with the alternative of selling his premises for a low price (if any) or continuing to operate for small profit (see Table III) many small

5. See also: E.J. Hanson, Local Government in Alberta, McClelland and Stewart, 1956, p. 47.

centre businessmen appear to have made the latter (Hobson's) choice. It might be a blessing in disguise for such a businessman if insured premises were to burn down, as several have.

The inconvenience of distance is a relative matter and furthermore it varies for different commodities. Those expensive to transport or those purchased frequently may best be provided locally. The most decentralized business establishments are grain elevators, bulk fuel depots, post offices, general stores and service stations (see Table II). The last three are visited very frequently while grain and bulk fuel have low value/weight ratios and hence are expensive to transport. Travel to large centres is particularly inconvenient for the farmer in the busy summer season, when some farmer-oriented businesses do much of their trade. An Edberg fuel distributor said Camrose dealers would compete in his area but for the high cost of transporting fuel so far from their depots. He added that at harvest time frequent deliveries have to be made. Some rural services are best decentralized and some small centres are a necessary alternative to the widely-spaced large trade centres.

That centralization has "diminishing returns" is evidenced by the decentralization of trade from large centres to Bashaw. Bashaw is far from large centres and its small rivals have been weakened by the centralization process and by rural depopulation (e.g. Meeting Creek and Ferintosh).

By extending credit, remaining open for long hours, and combining several businesses in one, the small centre businessman may increase his turnover and economies of scale. Several store-keepers felt that credit is what keeps most small centres in existence;

large centre firms rarely give credit, at most they allow thirty days to pay. Most surveyed businesses do a significant, in some cases the greater, proportion of trade on credit. Hotels, cafes and barber shops are the only exceptions, and over 50 per cent of the sales of forty-three of the remaining businesses are by delayed payment. In general, Bashaw businesses rely less on credit extension than businesses in the other small centres: thirty-four Bashaw establishments do less than 25 per cent of their trade on credit. Interviewees said it was difficult to refuse credit to customers they know personally, and while retrieving debts was often equally difficult, credit extension is essential if small centre firms are to stay in business. One informant said recourse to the "debtor's court" is impractical in the small and close-knit rural community. Credit extension is at once a help and a hindrance to small centre economies. Over-extension of credit has contributed to the closure of businesses (e.g. in Bittern Lake) and a Bashaw man said he sometimes gets customers from outside his normal trade-area because they have accumulated too many debts in their local centre to get any more credit there. Reliance on credit sales is symptomatic of the economic vulnerability of many small businesses.

Remaining open for long hours (e.g. Ferintosh stores are open two evenings a week) is a less dangerous technique but it too points to the marginal nature of small centre economies; businessmen in these centres have to work harder for a given profit than their counter parts in larger places. Multi-functional businesses reflect a low degree of business specialization and an attempt to increase

economies of scale in the small centre (e.g. the general store, post office and fuel delivery business in Armena). The combination of several functions in one business is not confined to small centres – the general store has its counterpart in the city department store – but for survival it is often a necessity in small centres.

The small centre is important in the social life of the rural community. There is at least one church in each surveyed centre, small centres have schools, social organizations, community halls, curling rinks and ball parks, and the beer parlour is a local meeting place. Social forces also impede readjustment in the rural service system but social functions are being centralized. Churches have been abandoned (e.g. in Dorenlee), halls have been closed (e.g. in Meeting Creek), and there are now fewer social events in the smaller places. Community facilities in Bittern Lake and New Norway have been improved, however, as these places grew in importance as residential centres. Trade centre population growth augments the local threshold population and may help counteract centralizing forces. It is influenced by improvements in the amenities of the centre: for instance, according to Ferintosh businessmen, farmers in the Ferintosh area have retired to New Norway because, unlike Ferintosh, it has water and sewage systems. Some retired people in Mirror are opposed to improvement as it might raise their living costs, but utilities are generally an incentive to settlement.

Yet all these factors serve only to delay the centralization of rural service. Despite improvements in the transportation

system, time-distance is still the main factor counteracting the benefits of economies of scale and spatial concentration.

C The Prospect for Small Centres

Change is a fundamental characteristic of a central place system and further centralization of rural service can be expected because the system is not yet adjusted to present day conditions. But because of the "time-lag", the obstacles to readjustment, and the nature and number of factors involved it is impossible to predict the extent and effects of future centralization. Because of "diminishing returns", centralization to large centres may not continue at its past rate (recently the rate has been lower than in the immediate post-war decade). Unless there are great improvements in transportation the most significant centralization in the immediate future may be within the group of small centres. It may be only a matter of time before more centres become extinct as a result of forces already in operation, and the extinction of some centres would benefit those remaining. The question is which centres are most likely to cease functioning, or might most of them flounder on when the "sacrifice" of several would ensure that a few could continue to provide effective service to the farm community? If such a "sacrifice" will not occur under normal market conditions should it be an objective of regional planning?

Prediction is especially difficult in very small centres. A single business may be all-important and who can predict the actions of individual businessmen? Again minor factors such as population change within a trade centre may decide the outcome of competition

between stronger but equally matched forces. The building of a school, road improvements or other public investment could ensure the survival or extinction of a small centre.

Opinions on the prospect of each small centre were obtained from the businessmen in the centre and from rural interviewees who trade in them. Farmers think the grain elevators in Duhamel and Doreenlee will eventually be closed down, and, according to businessmen, Armena and Bittern Lake will continue to decline in economic importance, though Gwynee may remain unchanged. The populations of Bittern Lake and Gwynee may continue to grow but the absence of a sewerage system militates against residential development in Gwynee. Four of the six businessmen in Meeting Creek and five businessmen in Ferintosh foresee continued economic decline. Farmers were unanimous in predicting continued deterioration in Meeting Creek, four mentioning that its existence depends heavily on its two garages, and a majority predicted decline in Ferintosh. Ferintosh businessmen see the installation of utilities as a possible solution. Interviewees are more optimistic about New Norway's fate as its population may continue to grow but opinion on Edberg is divided, five businessmen stating that the centre will probably decline. Eight Hay Lakes interviewees said their centre would maintain its present importance though three of them think it will decline if the creamery closes. Four think Hay Lakes will decline in any case and several mentioned that New Sarepta has a better chance of retaining rural support.

Mirror's decline will continue according to six business rep-

representatives, three think it will remain unchanged and three hope the construction of a new Junior High School will cause trade to increase. The absence of piped water and sewerage systems may impede further residential development. A majority of farmers predicted commercial decline in Donalda, particularly when the highway to Stettler is completed, and two said they would transfer trade to Bashaw if the Bashaw road were improved. Both businessmen and farmers agree that Bashaw will probably continue to grow, though several think its recent growth rate cannot be maintained, and the general opinion is that none of the other small centres will grow and most of them will continue to decline. Most farmers want their local centres to survive but virtually all have withdrawn some of their support from them.

From a knowledge of recent trends and the present space-economy it is possible to make a subjective appraisal of the relative viability of centres in the study area. In the continuing competition it will be a case of "the survival of the fittest" - fittest in terms of number of functions, location relative to rivals of differing strengths, density of the surrounding rural population and also size of trade centre population. Small centres close to large will lose all or nearly all their rural service function but some may develop as residential centres. The small centres with the most functions and those furthest from large centres have the greatest chance of maintaining or improving their economic importance but their populations are unlikely to grow significantly.

Within the next ten to twenty years Duhamel, Dorenlee and

probably Armena will become extinct. Gwynee and Bittern Lake will lose much of their rural service function (perhaps all in the case of Bittern Lake), though the population of both centres will probably increase. Both Meeting Creek and Ferintosh will continue their sharp decline and within the next twenty years both may be reduced to at least the status of present day Armena. Meeting Creek's population will continue to decrease (its water supply has to be brought in by rail) and unless (and perhaps even if) utilities are installed in Ferintosh it also will be depopulated. Probable future changes in New Norway and Edberg are more difficult to deduce. Both will probably survive as rural service centres, New Norway benefiting from the decline of Ferintosh and Edberg benefiting from the decline of both Ferintosh and Meeting Creek. Whether one can benefit in rural trade at the other's expense is impossible to say; New Norway will probably continue to develop its residential function but at present Edberg is the more important in rural service and it is further from Camrose. Hay Lakes will probably decline as a rural service centre to the advantage of New Sarepta, but to what extent cannot be foreseen. Mirror will lose much of what little rural support it now has (to Bashaw, Alix, Lacombe and Stettler) and its population may also decline. The cost of installing utilities might be prohibitive — the town is very spread-out, a legacy from the "Land Boom" years early this century when many lots were surveyed but were not "improved." Donalda will continue to lose trade to Stettler and Bashaw (though it may gain some from Meeting Creek) but the paving of the road to Stettler may bring an

increase in its population — in particular an increase in the number of commuters in residence.

Of all the small centres Bashaw is most likely to continue growing though its recent growth rate may not be maintained, (it may have reached a peak in 1963 when the hospital and six new businesses opened). Competition from Alix, which is nearer to large centres, will probably continue to decline, but Bashaw will gain mostly from the decline of Donalda, Mirror, Meeting Creek and Ferintosh. Bashaw merchants consider that improvement to the Donalda - Bashaw road would help their trade, but the Donalda - Stettler highway might draw some trade away from Bashaw as well as from Donalda. The decline of its small rivals should however ensure that Bashaw can continue to withstand the competition from large centres. It is unlikely ever to achieve the present status of even the smallest of the large centres (Lacombe) and as the large centres will probably continue to increase in importance the gap between them and Bashaw may well get wider in the future.

Some centres will be sacrificed but in some cases the sacrifice may be only partial (e.g. Hay Lakes - New Sarepta, and New Norway - Edberg). Such a potential situation might be improved by planning measures — for instance, either by the allocation or withholding of public investment.

It is not possible to set the dates or exact order of these probable trade centre changes but it appears highly likely that a number of centres will become extinct under normal market conditions — probably the smallest first. This readjustment of the rural service

system will be advantageous to Bashaw, perhaps to New Sarepta; a few other small centres — New Norway, Hay Lakes or Edberg perhaps — will benefit to a lesser extent and the large centres will also gain.

Introduction

The first part of the book

The second part of the book covers the following topics: the history of the book, the structure of the book, the content of the book, the style of the book, the language of the book, the format of the book, the design of the book, the production of the book, the distribution of the book, the marketing of the book, the evaluation of the book, the conclusion of the book.

Chapter 10: The Book as a Product

The book is a product of the publishing industry. It is a product that is designed to be sold to the public. The book is a product that is designed to be sold to the public. The book is a product that is designed to be sold to the public.

PART IV

CONCLUSIONS

The book is a product of the publishing industry. It is a product that is designed to be sold to the public. The book is a product that is designed to be sold to the public. The book is a product that is designed to be sold to the public.

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Chapter 13

Conclusions

The main conclusions drawn from this study follow from its objectives and relate to: (1) the dynamic nature of the central places system; (2) the merits and weaknesses of the approach and techniques used; and (3) the general relevance and theoretical implications of the study.

A. Changes in the Central Place System

Variation through time is a fundamental characteristic of central place systems. In Central Alberta, as elsewhere, rural service was already becoming more centralized before World War II. This trend was accelerated after 1945, as transportation improved, farms became more mechanized, rural areas experienced depopulation, and the economic and social horizons of the farm community expanded.

The trade centres which at present provide most of the requirements of the study area may be divided into two groups: (1) small centres with less than fifty businesses and populations of under 700, though the maxima are generally closer to twenty and 300; (2) larger, less numerous and more widely spaced centres with over 140 businesses and more than 3,000 inhabitants. With increasing centralization the large centres have grown and the small have declined at varying rates. Since approximately the mid-1950s, as increased centralization to large centres reached, for the time at least, a point of "diminishing returns," there has been a simultaneous though weaker counteracting trend of decentralization from

large centres to Bashaw — the small centre farthest from large rivals. Increased competition from large places has led to complex readjustments within the group of small centres as each small centre struggled to survive. The centralization of trade to the largest centres in this group continues and, in general, the smallest of the small centres have suffered the greatest proportional decline, several of them becoming extinct. Those small centres furthest from a large centre and those with the most functions (two characteristics common to some small centres) have the best chance of survival. The small centres can be divided into arbitrary classes (see Table II) but they do not fall into a neat hierarchical order; because the system is dynamic there are transitional stages which blur hierarchy divisions. Because conditions change, a regular distribution of centres of the same size would hardly be possible at a given time even on the homogeneous plain postulated by Christaller.

The findings of the two interview surveys and the implications drawn from postal revenue data correspond closely. The large centres are clearly differentiated from the small, and Bashaw is clearly the most important of the small centres (it now has "intermediate" status as far as functions are concerned). The large centres perform more functions, provide better service, have larger trade-areas and receive the greater proportion of the expenditure of rural residents. Ninety-five per cent of rural interviewees visit a large centre — Camrose, Wetaskiwin, Ponoka, Stettler or Lacombe — at least once a month; the remaining 5 per cent rely mainly on

Bashaw. The large centres draw regular customers from distances of up to twenty-eight to thirty-eight highway-miles, most of Bashaw's customers are within twenty highway-miles of the centre, while the other small centres have few customers beyond ten highway-miles. But because of their greater accessibility, the small centres continue to be the more frequently visited — most rural interviewees visit a small centre more than once a week.

The small centres all provide rural services though Mirror, Bittern Lake, and to a lesser extent Gwynee, New Norway and Ferintosh now have a proportionately large residential function. The order of centres by total economic activity corresponds closely with their relative importance in rural service, with the exception that Mirror, essentially a railroad maintenance centre, has relatively little rural support. Small centres trade mainly in "convenience goods" and commodities expensive to transport: grain, bulk fuel, fertilizer, food, hardware, postal services and automotive and machinery servicing. There is a relationship between the threshold population of a function, its degree of centralization, and the extent of its trade-area. But there is only a loose relationship between trade-area extent and turnover, and the median trade-areas of adjacent small centres overlap to a considerable extent. The range of a given commodity varies with centres of differing functional complexity. As functional complexity decreases the profits of individual businesses tend to decrease (see Table III) and many are economically marginal. In order to have adequate economies of scale, small centre businesses are often multi-functional

and a low degree of business specialization is a characteristic of the small centre.

Bashaw has gained in functions (to the benefit of existing businesses) and in trade in the last decade, at the expense of both small and large centres. Its small rivals have been weakened by competition from large centres and by rural depopulation, and Bashaw's growth has filled a "vacuum" in the rural service system. All the other small centres have lost functions and businesses, and, in general, the remaining businesses do less trade than formerly. Rural interviewees now visit Camrose, Wetaskiwin, Ponoka, Edmonton, and Bashaw more frequently and the other small centres less frequently, and this trend is even more pronounced with regard to the allocation of expenditures. As well as losing trade to large centres, Meeting Creek, Ferintosh, Mirror, Donalda and, to a lesser extent, Edberg have lost trade to Bashaw, and Hay Lakes has suffered from New Sarepta's competition. Edberg has gained from Ferintosh, Meeting Creek and Donalda, New Norway has gained from Ferintosh, and Donalda has gained from Meeting Creek. But, despite these benefits from the decline of neighbouring centres, all except Bashaw have recently experienced a net decrease in total trade. Most of the net transfers of trade explicitly reported by interviewees have been centralizing transfers to large centres and Bashaw, and a few concerned centralization in specific commodities (e.g. grain, food, hardware, bulk fuel) to other small centres, notably Edberg. But twenty interviewees reported a net transfer to Bashaw from large centres -- from Ponoka, Stettler, Lacombe and

also from Camrose. Bashaw is the only small centre whose trade-area has recently expanded appreciably; the trade-areas of the smallest centres have contracted in spite of (indeed indirectly because of) the greater mobility of the rural community.

Changes in postal revenues indicate that all the small centres, Bashaw included, have declined relative to the large centres, and most have experienced an absolute decline since 1945. Bashaw, Alix, Hay lakes, New Sarepta, New Norway, Donalda and Edberg declined least. There has been less change in the order of economic importance of small centres since the war which may indicate that the central place system is now more "mature" than in pre-war years. A lessening of spasmodic change makes prediction and planning easier.

The benefits of spatial concentration and economies of scale, and the inconvenience of the time-distance factor are the main forces involved in the centralization process. The inertia of established location and fixed capital is a major obstacle to readjustment in the system and is an important force counteracting centralization. Changes in rural trading practices are the immediate cause of trade centre change (though to some extent they are also an effect), and change within one centre has repercussions on other centres in the system. The main factor behind these changes has been transportation improvements — it is transportation which "binds" the centres into a system. Since 1945 the number of privately-owned cars has greatly increased and paved highways have been constructed.

Environmental factors influence the size and spacing of trade

centres (e.g. lakes from parts of the boundaries of small centre trade-areas and such factors as soil quality influence rural population densities) but they are relatively insignificant as factors of change. Rural depopulation — potentially a very strong force for centralization — has indirectly benefited the large centres and Bashaw, but it has not been sufficiently great or varied in distribution to be a major factor in the study area; and small centres have declined in spite of increases in their populations. Other minor factors include changes in technology and marketing techniques, change in threshold populations, public investment, credit availability and local loyalties. Although minor, in certain circumstances such factors could be important in deciding the outcome of competition between stronger but evenly matched forces. However it is difficult to estimate their effect, and as they may act in a somewhat random fashion they help make prediction difficult.

All these forces operate in a framework of relative accessibilities and comparative advantages. Distance from large rivals and the nature of those rivals are the main factors influencing the size of small centres. Thus Bashaw is relatively far from large centres and its trade-area extends farthest towards the smallest of the large centres which serve the study area — Lacombe, Stettler and Ponoka. Important secondary factors are location relative to other small centres and the relative size of small rivals.

The small centres with least functions will decline most in the immediate future and some (most probably Duhamel, Dorenlee,

Armena, and Bittern Lake) will cease to be trade centres. Gwynee, Meeting Creek and Ferintosh will continue to decline steadily in economic importance and the decline of Mirror and Donalds also has a high probability. Only Bashaw has a good chance of continued growth, though it will probably be at a reduced rate. The future of Hay Lakes and New Sarepta and of Edberg and New Norway is more difficult to foresee. It is desirable that one in each pair survive (especially as centres such as Armena and Meeting Creek appear doomed) but which two are the more viable is difficult to determine. It would be better if one of each pair became clearly dominant at the expense of the other, rather than have the viability of both dissipated by continuing mutual rivalry. Largely because of the inertia of established location there is duplication of functions at each pair of adjacent sites. Rather than have all small centres degenerate completely to leave a countryside empty of "convenience centres", centralization within this group will continue, but it might be best if, in certain cases, the process was accelerated by planning measures.

B Methodology

A study based on detailed fieldwork in a small area gives a better understanding of the central place system, and especially of small centres, than study of a large area which could of necessity depend more on library research. On the other hand, where relatively few centres are studied, statistical techniques may have less validity and the general relevance of findings may be less, or at least may be less obvious.

Ideally, large and small centres should receive equal consideration but the study emphasizes the small centres because of their greater variation and greater proportional change through time. Information on small centres is not readily available, they have been neglected in many studies, and some of the methods devised to describe central place phenomena are not applicable to smaller places (e.g. those utilizing data on wholesaling, newspaper circulation, banking, etc.). Similarly the time dimension has been neglected (or, if treated, population change is often the main theme) and classical central place theory ignores the fact that the system it attempts to describe is dynamic. Measurements of the present status of centres in the study area facilitated the testing of indicators of their economies. Concentration on recent change helped isolate the main factors behind present characteristics, and provided a basis for assessing possible future developments.

The Trade Centre Business Survey was essential for obtaining basic data on small centres. But it had the weaknesses inherent in interview surveys in depending on the reliability and co-operation of interviewees. Cross-checking of answers was possible, however, and reasonably accurate data on the present economy of small centres were obtained. The only possibly significant error was the calculation that Ferintosh has a higher turnover than New Norway; this is contrary to the evidence of the postal revenue index and to implications drawn from the rural trade data.

The survey was completely inadequate for obtaining accurate data on trade centre change: managements change, former operators

cannot be found for interview and the memory of present operators is fallible. Only the most recent changes are remembered in any detail. It is concluded that interview surveys are of very limited use in historical research.

Dun and Bradstreet Reference Books do show the minimum number and types of businesses in a centre at specific past dates. But they do not list all businesses and the criteria used for excluding businesses are not consistent through time, so this source also has severe limitations.

The Rural Household and Farm Survey also gave deficient information on change: many interviewees appeared to underestimate the extent of change in their trading practices since 1945. But it complemented, and provided a partial check to, data collected in the trade centre survey. It supplied additional information (in particular, explicit evidence of trade decentralization to Bashaw); it facilitated a detailed analysis of specific rural services in terms of location; and it permitted a statistical (chi-squared) test of the importance of the accessibility factor in rural trade. Trip frequency and expenditure data provided comprehensive indicators of the present rural support and changes in the rural support of the various centres.

Postal Revenue data are more complete than population data and as postal revenue is itself an expression of one type of tertiary activity it is more closely related to the total tertiary activity and hence to the centrality of a trade centre. Population is a particularly poor index of small centre economies and it is probably getting even less reliable as the residential functions of some small centres increase in proportional importance. Nearly all centres have a post office (and postal

service was even more decentralized in the past) and records have been kept for every financial year since the late 19th century. Postal revenue data is thus available over both space and time. All types of people use the post office and it has been less susceptible to change than many other small centre establishments. In view of the paucity of data on small places, postal revenue is especially important: it provides a standard basis for comparing the economic levels of large and small centres.

Trade centre residents and people from outside the centre contribute to the centre's postal revenue so it is an index of economic activity rather than an index of centrality. However economic activity and centrality are generally closely related in rural service centres, and especially in small centres. If reliable average percapita contributions to the postal revenue of a given area could be calculated for both trade centre and rural residents (if indeed there is a significant difference in their contributions), the net outside contribution to a centre's revenue could be estimated and this figure would be a better approximation of centrality.

Postal revenues are in "current dollars" and these values have to be converted to "constant dollars" before direct comparisons can be made between different years. But, by expressing the revenue of each centre as a percentage of the total revenue of a constant group of centres, relative changes within that group can be ascertained. In the study of small areas postal revenue manipulations are a supplement to, not a substitute for, field work. But because of their availability, and the uniformity of postal charges within national boundaries, postal revenue data should prove useful in the study of centres over a wide area.

C Theoretical and Planning Implications

Prediction is necessary in planning and theory helps make prediction possible. The planner is interested in achieving the best possible spatial organization of essential services. Theory should aid in defining the optimum organization and in its subsequent realization. Ideally, small rural service centres should be reduced in number and rearranged in space; they will become fewer but they will not be rearranged because of fixed investment at existing sites. But the planner could decide which small centres ought to survive, to most nearly approach the hypothetical ideal. Thus both planning and theory are concerned to some degree with ideal situations. A dynamic theory would thus be of greatest value in pointing out the probable effects of proposed planning actions, or of a lack of planning. The improvement of theory is more than an academic exercise. In the absence of a dynamic theory it is impossible to predict objectively, with known probability. The predictions presented in this study are little more than conjecture. They do, however, point to specific aspects of central place systems which merit further investigation, from considerations both of theory and of planning.

Greater precision in measurement is essential to the continual improvement of theory. The use of postal revenue data has been outlined and the potential of this index merits further study. In particular it may be possible to use these data to define hierarchical classes for both the present and the past. Also some allowance should be made in central place theory for variation in basic/non-basic economic ratios. The diminishing returns of increases in centralization and possible trade decentralization need to be studied. And not enough work has been done on the lower levels

of the hierarchy, the level where proportional change has recently been greatest. Do two centres close together act in some respects as a single larger place (e.g. Bashaw and Alix)? Is this partly the reason for observed irregularities in central place systems? Again, under what conditions will one centre overwhelm an adjacent rival of similar size (e.g., New Norway and Edberg)? It is impossible to measure all the factors which bear on central place developments and even if this were possible the element of chance remains. Because it deals in successions of probabilities, the historical-predictive approach, using simulation models, would appear to offer the best hope of answering these and other questions here left unanswered. If this hope were only partially fulfilled, planning would benefit significantly.

The big towns are indeed getting bigger as Steinbeck has observed. If this study has pointed to the complexity of the processes so succinctly alluded to by Steinbeck, and in so doing has indicated some of the things to be considered in a dynamic central place theory, it will have served its purpose.

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APPENDIX A

Trade Centre Business Survey Questionnaire

I. For all businesses:

1. Name of business:
2. Goods and/or services provided:
3. What changes have there been in the goods and/or services provided in recent years? (please give dates)
4. Are you the owner, manager or lessee?
5. Who is the owner?
6. When and by whom was this business established?
7. Including yourself, how many people work in this business?
8. How many people worked here in the past? (dates)
9. Why did the number of workers change?
10. What is the payroll per week?
11. What is the value of turnover of this business per year?
12. How has it changed in recent years? (dates)
13. What do you consider the reasons for this change?
14. Who are your competitors in this trade centre:
15. Who are your strongest competitors in other trade centres?
16. What changes have there been in the number and strength of your competitors in recent years, (dates) (a) in this centre, (b) in other centres?
17. Do you have a delivery service?
18. What % of your customers are regular?
19. From how far away do your regular customers come? (Outline trade-area on a map showing the name of the owner of each quarter-section).
20. Is this the range of your delivery service?
21. Has your trade-area increased or decreased in recent years? (dates)
If so, by how much? (Refer to map)

22. What do you consider the causes of this change?
23. Do you advertise? If so, where?
24. What % of your sales are cash? What % credit?
25. Where do you buy your stocks?
26. What is the value of your stock?
27. How has this changed in recent years? (dates)
28. How has mail order buying affected your trade?
29. How have supermarkets and/or department stores affected your trade?
30. How has trade been affected by improvements to (a) highways,
(b) local roads?
31. What is the annual net profit of this business?

(a) Less \$2,000	(d) \$6 - 8,000
(b) \$2 - 4,000	(e) \$8 - 10,000
(c) \$4 - 6,000	(d) Over \$10,000
32. How and why has this changed in recent years? (dates)
33. Do you now have more or less customers than in the past?
34. Do customers buy as much from you as they did in the past?
35. How long have you lived in this trade centre? In that time, has it grown, declined or remained the same?
36. What changes do you remember in the number and type of businesses and facilities here? (dates)
37. Do you think this trade centre will decline, grow, or remain the same in the future? Why do you think so?
38. Additional comments?

II For Service Stations, Garages, Bulk Fuel Distributors, Implement Dealers, etc.

1. Which of the following do you provide? For which do people come most frequently and on which do you make most of your profits? Gas, oil, bulk oil, bulk fuel, kerosene, tyres; farm machinery, farm machinery parts, farm machinery servicing, new cars and trucks, car and truck parts, automotive servicing.

2. Has this always been the case? If not, please elaborate:
3. Is your trade-area the same for all these items? If not, elaborate (Refer to map):
4. Have you a brand agency?
5. Where is the nearest other such agency?
6. Did you ever have a brand agency? If so, why was it discontinued?
7. What are your monthly gas sales? What % sales are to (a) regular customers, (b) passing customers? What % sales are for on-farm use?
8. How many licensed mechanics work in this business now? How many worked here in the past? (dates)

III For Grocery and General Stores

1. Which of the following do you sell? For which items do people come here most frequently? Meat, eggs, tinned foods, drugs, vegetables, milk, bread, butter, bacon; men's clothes, women's clothes, children's clothes, footwear, furniture, appliances, hardware.
2. Has this always been the case? If not, elaborate:
3. What % of your regular customers buy their "weekly groceries" in this store? If this has changed in recent years, please elaborate and give dates:
4. Is your trade-area the same for all these items? If not elaborate (Refer to map):

IV For Hotels and Cafes

1. What are your annual liquor sales?
2. How many bedrooms are there in this hotel? What is their occupancy rate:
3. For how long is this cafe open each day?

APPENDIX B

Rural Household and Farm Survey Questionnaire

Household location: township, range and section.

1. How long have you lived here?
2. How many acres do you farm (a) now, (b) in the past? (dates)
3. How many men do you now employ? An in the past? (dates)
4. Where do you market: grain, livestock, milk, vegetable, eggs.
(Delete if not produced for sale).
5. Have you always marketed these products in the places? If not, please elaborate.
6. How often per week do you deliver milk products to a creamery?
7. Where do you buy (% in each place; delete if not purchased in any centre): Farm machinery, machinery parts and servicing, animal feed, fertilizer, seed grain, livestock, automobiles and trucks, automotive servicing, bulk oil and gas, construction materials, hardware.
8. How have these buying practices changed in recent years? (dates)
9. Where do you go for the following: Doctors, lawyers, veterinarian, bank, insurance, administration, entertainment, district agriculturalist, post office (Is your mail delivered?)
10. Have you always gone to these places for these services? If not, elaborate and give dates:
11. How many road-miles are you from (centres visited for trade purposes)?
How long does it take to drive to these places?
12. How have highway and local road improvements affected the accessibility of these places?
13. How much food do you produce for your own consumption?
14. Has catalogue buying increased or decreased in recent years? (dates)
15. Where do you buy groceries (% in each place)? Where do you buy "weekly groceries"? How and why has this changed in recent years? (dates)
16. Where do you buy (% in each centre): Furniture, appliances, clothing?
How and why has this changed in recent years? (dates)
17. Do you buy more from supermarkets and department stores now than in the past? If so, why?

18. From which centres and for what goods is there a delivery service.
19. How often do you go to (centres visited for trade purposes)? How and why has this changed in recent years? (dates)
20. What % of your total annual expenditure is spent in each centre? How and why has this changed in recent years? (dates)
21. How do you think it will change in the future?
22. Do you use (x) centre more than in the past because of: better selection of goods, greater variety of services, cheaper goods, road improvements, other reasons? Please elaborate:
23. Do you use (small local centre) because of: proximity, community loyalty, credit availability, other reasons? Please elaborate:
24. Do you think (local centre) will decline, grow or remain the same? Please elaborate.
25. In the past (i.e. pre-1945) where did the farmer of this land go for: blacksmith, harness, coal, kerosene, farm machinery, farm machinery servicing?
26. How has mechanization progressed on this farm? (dates)
27. What is the annual net profit of this farm:

(a) Less \$2,000	(d) \$6 - 8,000
(b) \$2 - 4,000	(e) \$8 - 10,000
(c) \$4 - 6,000	(f) Over \$10,000
28. Additional comments:

APPENDIX C

Correlation and Regression Analyses

The Product Moment Correlation Coefficient is "an index ... that reflects the degree to which changes in direction (+ or -) and magnitude in one set of data are associated with comparable changes in the other set."¹ Possible values of this coefficient (r) range from +1 to -1, and the formula used for finding (r) was:²

$$r = \frac{\frac{\sum a b}{n} - \bar{a} \cdot \bar{b}}{\sqrt{\frac{\sum a^2}{n} - \bar{a}^2} \cdot \sqrt{\frac{\sum b^2}{n} - \bar{b}^2}}$$

The nearer (r) approaches +1 or -1, the closer the correlation, positive and negative respectively. The correlation coefficient (r) may more conveniently be expressed as a coefficient of determination (r^2). This expresses, as a percentage, the proportion of the variance in one set of data that is "determined" by the other set.

The significance of (r) can be found by applying the Student's Test,³ using the formula:

$$(t) = \frac{r \cdot \sqrt{n - 2}}{\sqrt{1 - r^2}}$$

The value found for (t) is checked on a graph⁴ to find the percentage probability that (r) could have occurred by chance. Where this is only 0.1 per cent the coefficient is highly significant, and if the value is 5 per cent or

1. S. Gregory, Statistical Methods and the Geographer, London, 1963, p. 167.
2. Ibid., pp. 171 - 172.
3. Ibid., pp. 124 - 127, 179 - 181.
4. Ibid., Figure 27, p. 127.

less the coefficient can be considered significant.

Having found the correlation coefficient for two sets of data it is possible to graphically represent the relationship between them by constructing a "regression line."⁵ To construct a regression line to find values of (a) for given values of (b) the formula is:

$$a - \bar{a} = r \cdot \frac{\delta_a}{\delta_b} \cdot (b - \bar{b})$$

where (δ_a) = the standard deviation of (a), and (δ_b) = the standard deviation of (b).⁶ The actual values on which the calculations are based can be plotted on the graph and compared to the regression line values.

5. Ibid., pp. 185 - 192.

6. Ibid., p. 22.

APPENDIX D

Trade-Linkage Card Preparation and Computation

On each trade-linkage card the rural household was denoted by a code number (numbers 1 to 117, as on the completed questionnaires) and each trade centre was denoted by a code number. Each card contained information on 42 variables. Where no information was given on a particular variable the relevant column was left blank, and where a variable was irrelevant (e.g. if an interviewee did not trade in a particular commodity in any trade centre) a zero was registered. Blanks and zeros were excluded from computation.

Variable codes: the 42 variables were coded as follows:

a. V. 1. Farm Size:

- | | |
|----------------------------|---------------|
| 1. Less 2 Quarter Sections | 4. 4.0 to 5.0 |
| 2. 2.0 to 2.5 | 5. Over 5.0 |
| 3. 3.0 to 3.5 | |

b. V. 2. Farm Profit:

- | | |
|--------------------|---------------------|
| 1. Less \$2,000 | 4. \$6,000 - 8,000 |
| 2. \$2,000 - 4,000 | 5. \$8,000 - 10,000 |
| 3. \$4,000 - 6,000 | 6. Over \$10,000 |

c. V. 3. Accessibility Zone: zone numbers 1 to 9

d. V. 4. to V. 31, inclusive, concerned 28 different commodities (see questions 4 to 10, 15 and 16, Appendix B), the degree of present use and recent change in use of the trade centre for each. Degree of use was classified as all, some or none; change was classified as same (no change), more or less than in the past. Most of the data collected was not suitable for a more precise classification. The two qualitative classifications were combined in a coded graduation scheme:

1. All - same as in the past.
2. All - more than in the past.
3. Some - more than in the past.
4. Some - same as in the past.
5. Some - less than in the past.
6. None - less than in the past.
7. None - same as in the past.

e. V. 32. The number of trips per month to the centre:

1. 12 and over (3 or more times/week)
2. 4 - 11
3. 1 1/2 - 3
4. 1 (once/month)
5. 1/6 - 1/2
6. Less than twice a year.
7. None now, but used to visit the centre in the past.

f. V. 33. Trip Frequency expressed as a % of the total number of trips made per month to all trade centres.

- | | |
|-----------------|--|
| 1. 75% and over | 5. 10% - 20% |
| 2. 50% - 74% | 6. Less 10% |
| 3. 35% - 49% | 7. 0%, but used to go there in the past. |
| 4. 20% - 34% | |

g. V. 35. Percentage of Total Annual Expenditure allocated to the centre:

- | | |
|-----------------|------------------------------------|
| 1. 60% and over | 4. 10% - 24% |
| 2. 40% - 59% | 5. Less 10% |
| 3. 25% - 39% | 6. None now, but some in the past. |

h. V. 34, and V. 36, Change in Trip Frequency and Change in Percentage Expenditure, respectively, were given the same code scheme:

1. More than in the past.
2. Same as in the past.
3. Less than in the past.

i. V. 37 to V. 42, inclusive, concerned the pre-1945 use of the centre for six commodities:

- | | |
|---------|-------------|
| 1. Used | 2. Not used |
|---------|-------------|

Thus the first two variables concerned the circumstances of the interviewee and variable 3 was his location with respect to the trade centre to which the linkage card referred. Twenty-eight variables concerned present trade and change in trade in 28 commodities, three concerned present shopping trips and expenditure, two related to changes in trip frequency and expenditure allocation, and six related only to pre-1945 trading.

The classification schemes are arbitrary - this was unavoidable - but they are based on the nature of the data observed. The categories are

arranged in gradations, which allowed the association between any two variables to be tested.

Cross classification tables for selected pairs of variables in the trade linkages of each centre were obtained from the computer programme.¹ Frequency matrices and percentages, and the Chi-squared value with degrees of freedom, for each pair of variables, were the printed "output" of the computer. In this way, data on the use made of each trade centre and recent changes in this use were rearranged and tabulated in numbers and percentages for each accessibility zone. All the variables were paired with variable 3 (accessibility zone), and associations or lack of associations between variables were stated statistically.

Chi-squared values,² with degrees of freedom, were referred to published tables.³ If the observed value was equal to or greater than the table value for the 5 per cent level there is probably a significant association between the two variables (the value would be exceeded by chance only once in twenty similar cases), if it equalled or exceeded the table value for the 1 per cent level the chances of the association being significant are greater; and if the observed value equalled or exceeded the table value for the 0.1 per cent level the association is highly significant (the value would be exceeded by chance only once in a thousand similar cases).

1. Program CROS - 1, T-801-1, Cross Classification with Subdivision, Computing Center Library, University of Alberta, Edmonton.

2. For an explanation of the Chi-squared Test see: S. Gregory, op. cit., pp. 151 - 166.

3. A.L. Edwards, Statistical Methods for the Behavioral Sciences, New York, 1958, Apendix, Table IV.

In the trade-linkages of each of the eighteen trade centres (see Chapter 7, Sections A and B) V. 3 was cross tabulated with V. 4 to V. 42, inclusive, giving 39 tables for each centre and a total of 702 tables. In order to present in one table the data on a given variable for all eighteen centres, the original variable categories were regrouped and separated into categories of degree of present use and categories of change of use. The data in the 702 tables were condensed into 67 tables, 31 of which pertained to present trading, 30 to changes in trade, and 6 to pre-1945 trade.

The seven categories of each of the 28 variables referring to specific commodities were regrouped into: All (1 and 2), Some (3,4 and 5) and None (6 and 7); and change was classified as More (2 and 3), Same (1,4 and 7) and Less (5 and 6). Present use was tabulated separately from change in use by transcribing data from the tables obtained from the computer. The "residual" categories None and Same were not included in these tables in order that comparisons between the centres be as easy as possible.

The seven categories of trip frequency and percentage of total trips were collapsed into three categories in each case: e.g. Trip Frequency:

A = 1 and 2 = Once or more often per week.
 B = 3 and 4 = Once to three times per month.
 C = 5 = Once in six months to once in two months.

The six classes of percentage total expenditure were regrouped into three classes:

A = 1 = 60% and over.
 B = 2 and 3 = 25% - 59%
 C = 4 and 5 = 1% - 24%

By thus regrouping the data into broader classes and, in the case of Variables 4 to 31, inclusive, dividing the data into categories of present use and categories of change, it was possible to prepare concise tables in

which the relevant information could be seen at a glance. Some precision was lost but in each case reference was made to the data as originally classified.

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